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David N. Cassuto

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SYMPOSIUM ARTICLES

HOT, CROWDED, AND LEGAL: A LOOK AT INDUSTRIAL AGRICULTURE IN THE UNITED STATES AND BRAZIL

By

David N. Cassuto & Sarah Saville*

Over the last sixty years, industrial agriculture has expanded in the United States and throughout the world, including in Brazil. Any benefit this expansion has brought comes at significant environmental and social costs. Industrial agriculture is a leading contributor to global climate change, air and water pollution, deforestation, and dangers in the workplace. This Article discusses the impact of industrial animal agriculture in the U.S. and Brazil. It also examines the laws pertaining to industrial agriculture in both countries and provides a comparative analysis of the two legal regimes. Finally, this Article concludes with the observation that although the price to the U.S. and Brazil of remedying these impacts are high, the costs to humans, animals, and the environment by failing to do so is immeasurable.

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* © David N. Cassuto & Sarah Saville 2012. Professor Cassuto is a professor at Pace Law School and the Director of the Brazil-American Institute for Law and Environment, a research, teaching, and policy center dedicated to advancing the United States and Brazil's joint goal of improving environmental protection. He is also a Visiting Professor of Law at the Federal University of Bahia, Brazil. Professor Cassuto, a prolific writer and lecturer, has published a number of works on issues in animal law, water law, and other areas of environmental jurisprudence. Ms. Saville is currently a J.D. Candidate, Class of 2012, at Pace Law School.

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I. INTRODUCTION

Industrial agriculture has been on the march in the United States and throughout the world for over sixty years.¹ Although the industry boasts of the benefits of industrial agriculture,² many of those alleged benefits come at significant cost. Industrial agriculture is a leading contributor to global climate change,³ air⁴ and water pollution,⁵ deforestation,⁶ and dangers in the workplace.⁷ Furthermore, the pollution it generates, as well as the dangers posed by consumption of industrially produced animal products, poses

¹ Gaverick Matheny & Cheryl Leahy, *Farm-Animal Welfare, Legislation, and Trade*, 70 L. & Contemp. Probs. 325, 327–28 (2007).

² See Assn. of Brazilian Beef Exporters, *Brazilian Beef*, <http://www.brazilianbeef.org.br> (accessed Apr. 7, 2012) (boasting “Good for you, Good for our planet”); Beef USA, *Human Nutrition*, <http://www.beefusa.org/humannutrition.aspx> (accessed Apr. 7, 2012) (recommending beef consumption as part of a healthy diet); Smithfield, *Our Commitments*, <http://www.smithfieldcommitments.com> (accessed Apr. 7, 2012) (comprising an entire website dedicated to Smithfield Foods corporate responsibility and social benefits).

³ Food & Agric. Org. of the UN (FAO), *Livestock Impacts on the Environment*, <http://www.fao.org/ag/magazine/0612sp1.htm> (Nov. 2006) (accessed Apr. 7, 2012).

⁴ Sustainable Table, *Air Pollution*, <http://www.sustainabletable.org/issues/airpollution> (accessed Apr. 7, 2012) [hereinafter *Air Pollution*].

⁵ Henning Steinfeld et al., *Livestock's Long Shadow: Environmental Issues and Options* xxii (FAO 2006) (available at <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> (accessed Apr. 7, 2012)) [hereinafter *Livestock Impacts on the Environment*].

⁶ Allister Slingenberg et al., *Study on Understanding the Causes of Biodiversity Loss and the Policy Assessment Framework* 41, 158, 178 (European Commn., Directorate-Gen. for Env. Oct. 2009) (available at ec.europa.eu/environment/enveco/biodiversity/pdf/causes_biodiv_loss.pdf (accessed Apr. 7, 2012)).

⁷ *Air Pollution*, *supra* n. 4, at “Effects on Workers.”

significant health risks.⁸ Apart from dangers to the environment and humans, routine mistreatment and abuse of the animals raised for food (meat, dairy, and eggs) is perhaps the most infamous and viscerally disturbing aspect of the industry.⁹ Yet, increased public awareness and disapproval of industry practices have done little to stem the growth of industrial agriculture.¹⁰

This Article examines the impacts of industrial animal agriculture in the U.S. and Brazil, surveys the regulatory environments in the two countries, and discusses how those regulatory regimes have enabled the spread of factory farming while taking little heed of its pernicious effects.¹¹ It focuses on the U.S. and Brazil for several reasons. First, these two countries have the first and eighth largest economies in the world, respectively.¹² Second, both countries have large agricultural sectors that play significant roles internationally.¹³ Third, both countries have begun addressing the issues raised by factory farming while having much work yet to do.¹⁴

Part II of this Article provides an overview of industrial agriculture and its major impacts on the environment, animals, and people, including problems specific to the U.S. and Brazil. Part III examines the history and current state of industrial agriculture in the U.S. and the relevant laws pertaining to industrial agriculture. Part IV examines the history and current state of industrial agriculture in Brazil and the Brazilian laws, or lack thereof, that regulate it. Part V compares the legal regimes of the U.S. and Brazil. The Article concludes by noting that, in spite of the normalization of animal products as an everyday commodity, the U.S. and Brazil must still adapt their laws to address the costs of industrial agriculture to the environment, animals, and people.

⁸ Polly Walker et al., *Public Health Implications of Meat Production and Consumption* 8(4) Pub. Health Nutrition 348, 348–49 (2005) (available at http://www.jhsph.edu/bin/y/h/PHN_meat_consumption.pdf (accessed Apr. 7, 2012)).

⁹ See Humane Socy. of the U.S. (HSUS), *Cruel Confinement*, http://www.humanesociety.org/issues/confinement_farm (accessed Apr. 7, 2012) (giving examples of the inhumane conditions livestock face).

¹⁰ See Sustainable Table, *Animal Welfare*, <http://www.sustainabletable.org/issues/animalwelfare> (accessed Apr. 7, 2012) (noting that the response from increased awareness of slaughter conditions has led to minor changes in animal welfare during and immediately before slaughter).

¹¹ Here and throughout this Article, the authors use the terms factory farming and industrial agriculture interchangeably. Agribusiness also refers to the modern agricultural industry.

¹² World Bank, *World Development Indicators 2011* 10, 12 (Intl. Bank 2011) (available at <http://www.scribd.com/WorldBankPublications/d/57736743-World-Development-Indicators-2011> (accessed Apr. 7, 2012)).

¹³ David Gibson, *Brazil v. Argentina: Different Responses to the Rising Food Commodities Market*, 15 L. & Bus. Rev. Ams. 851, 851 (2009); Logan Rishard & Charles E. Hanrahan, *Brazil's Agricultural Production and Exports: Selected Data* (Cong. Research Serv. Oct. 16, 2006) (available at <http://www.nationalaglawcenter.org/assets/crs/RL33699.pdf> (accessed Apr. 7, 2012)).

¹⁴ Wageningen UR Livestock Research, *Animal Welfare in a Global Perspective, the Brief Version: Welfare of Livestock* 6–7 (FAO 2009) (available at <http://www.fao.org/ag/againfo/themes/animal-welfare/aw-awhome/detail/tr/item/45205/icode/en> (accessed Apr. 7, 2012)).

II. INDUSTRIAL AGRICULTURE

The U.S. is the architect of the factory farm model.¹⁵ However, the practice of industrial agriculture has expanded throughout the world.¹⁶ The overarching economic model driving industrial agriculture is that massive production weight is more important than a high attrition weight.¹⁷ This means that it is more profitable to frequently slaughter a large number of unhealthy animals than to slaughter fewer, healthier animals less often.¹⁸

Global meat production is expected to rise from 233 million tons (as of the year 2000) to 300 million tons in 2020, and to double by 2050.¹⁹ By 2020, milk consumption will increase from 568 to 700 million tons, and egg consumption will increase by 30% over the same time period.²⁰ Much of the growth has taken place in only a few countries, including Brazil.²¹ Even excluding China (one of the other economic success stories of recent decades) and Brazil, *per capita* meat consumption in developing countries rose from 11 to 15 kilograms from the mid-seventies to the mid-nineties.²² When China and Brazil are included, the number rises from 11 to 23 kilograms over the same period.²³

A. Impacts of Industrial Agriculture

In addition to its other deleterious effects, industrial agriculture is a major contributor to greenhouse gas emissions. This Section looks at the

¹⁵ See Matheny & Leahy, *supra* n. 1, at 327–28 (listing “several technologies”—the combination of which has been referred to as “factory farming”—that were introduced to animal farming after World War II); see also Christopher Leonard, Associated Press, *Don Tyson Says Meat Company Seeks Global Growth*, USA Today (Nov. 2, 2008) (available at http://www.usatoday.com/money/economy/2008-11-02-642704429_x.htm (accessed Apr. 7, 2012)) (explaining how Tyson foods “embodied a new mode of agriculture that emerged in Southern states after World War II” by absorbing all the local pieces of a small town economy and bringing them under one corporate roof).

¹⁶ See *e.g.* Leonard, *supra* n. 15 (discussing Tyson’s international growth: “Tyson bought two Brazilian poultry companies and acquired majority ownership in a third” and “announced three joint ventures in China”); see generally Jane Shepherd, *The Self-Reliant Country: Sustainable Agricultural Policy for Australia?*, in *Global Food Insecurity: Rethinking Agricultural and Rural Development Paradigm and Policy* 149, 151 (Mohamed Behnassi et al. eds., Springer 2011) (noting the impacts that “global expansion of large-scale industrial farming” has had on the world).

¹⁷ Anastasia S. Stathopoulos, *You Are What Your Food Eats: How Regulation of Factory Farm Conditions Could Improve Human Health and Animal Welfare Alike*, 13 N.Y.U. J. Legis. & Pub. Policy 407, 411 (2010).

¹⁸ *Id.*

¹⁹ David N. Cassuto, *The CAFO Hothouse: Climate Change, Industrial Agriculture and the Law* 7 (Animals & Socy. Inst. 2010) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1646484 (accessed Apr. 7, 2012)) [hereinafter Cassuto, *CAFO Hothouse*]; Andrew W. Speedy, *Overview of World Feed Protein Needs and Supply*, in *Protein Sources for the Animal Feed Industry* 9, 9 (FAO 2004) (available at <http://www.fao.org/docrep/007/y5019e/y5019e05.htm> (accessed Apr. 7, 2012)).

²⁰ Speedy, *supra* n. 19, at 9.

²¹ *Id.*

²² *Id.*

²³ *Id.*

often-overlooked role of industrial agriculture in global climate change.

1. Global Climate Change

Industrial agriculture is the single largest source of greenhouse gases, responsible for approximately one-third of all human-caused greenhouse gas production.²⁴ Consuming just two pounds of beef is the equivalent of leaving a 100-watt light bulb turned on for twenty days continuously²⁵ or driving about forty miles.²⁶

For example, methane can trap heat in the planet's atmosphere twenty times more effectively than carbon dioxide²⁷ and stays in the atmosphere for approximately nine to fifteen years.²⁸ Ruminants (including cattle, sheep, and goats) are the largest animal emitters of methane, due to their unusual digestive system.²⁹ A single adult cow emits 176 to 242 pounds of methane per year.³⁰ Beef and dairy cattle accounted for 71% and 24% of methane emissions from livestock in 2009, respectively.³¹ Because of these methane emissions, as well as the significant amount of fossil fuel used in every aspect of factory farming,³² agriculture emits 18% of the world's greenhouse gases.³³ This is more than most industries, including transportation.³⁴

In addition to its direct impact on climate change, industrial agriculture creates a positive feedback loop that continuously amplifies its contributions. Increased global demand for meat spurs the conversion of forests to pastures and fields for growing feed crops for agricultural animals.³⁵ The pastures and

²⁴ Keith Paustian et al., *Agriculture's Role in Greenhouse Gas Mitigation* iii (Sept. 2006) (available at <http://www.c2es.org/docUploads/Agriculture%27s%20Role%20in%20GHG%20Mitigation.pdf> (accessed Apr. 7, 2012)).

²⁵ Mark Bittman, *Rethinking the Meat-Guzzler*, N.Y. Times (Jan. 27, 2008) (available at <http://www.nytimes.com/2008/01/27/weekinreview/27bittman.html?pagewanted=all> (accessed Apr. 7, 2012)).

²⁶ Nathan Fiala, *The Greenhouse Hamburger*, Sci. Am. 72, 74-75 (Feb. 2009) (available at http://vegetarian.procon.org/sourcefiles/the_greenhouse_hamburger.pdf (accessed Apr. 7, 2012)).

²⁷ U.S. Env'tl. Protec. Agency (EPA), *Methane*, <http://www.epa.gov/methane/index.html> (accessed Apr. 7, 2012).

²⁸ *Id.*

²⁹ EPA, *Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2009* 6-2 (Apr. 15, 2011) (available at http://www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Complete_Report.pdf (accessed Apr. 7, 2012)) [hereinafter *Emissions and Sinks Inventory*].

³⁰ Brighter Green, PowerPoint, *Global Warming & Food Choices* slide 8 (available at www.unaosa.org/Document.Doc?id=457 (accessed Apr. 7, 2012)).

³¹ *Emissions and Sinks Inventory*, *supra* n. 29, at 6-2.

³² See Sustainable Table, *Eat Local, Buy Local, Be Local: What Is Local?*, <http://www.sustainabletable.org/issues/eatlocal> (accessed Apr. 7, 2012) (discussing industrial food production's heavy dependency on fossil fuels).

³³ *Livestock Impacts on the Environment*, *supra* n. 5, at "Part IV" (describing livestock's role in climate change).

³⁴ *Id.*; Kevin A. Baumert et al., *Navigating the Numbers: Greenhouse Gas Data and International Climate Policy* 57 (World Resources Inst. 2005) (available at <http://www.wri.org/publication/navigating-the-numbers> (accessed Apr. 7, 2012)).

³⁵ Cassuto, *CAFO Hothouse*, *supra* n. 19, at 1.

fields require fossil-fuel-based fertilizers and manure production,³⁶ which exacerbates greenhouse gas emissions, and emissions accelerate climate change.³⁷ Elevated temperatures negatively impact animal feed crops, facility climate control costs, and pesticide efficacy.³⁸ These increased costs require more volume, which requires more demand, which then requires more conversion of forests to fields.³⁹ Further, the land that goes to industrial agriculture could be used instead to sequester carbon in trees.⁴⁰ Thus, utilization of land for carbon-intensive activities incurs opportunity costs as well.

2. *Confinement of Animals*

Industrial agriculture is infamous for its horrific abuses of animals. About 10% of all animals die while still on the farm.⁴¹ Cows in veal crates, pigs in gestation crates, and chickens in battery cages are so confined that they cannot turn around freely, if they can move at all.⁴² Many animals that are less confined are nevertheless so crowded together that they trample each other to death.⁴³ Confinement also causes emotional stress arising from the animals being unable to engage in instinctive behaviors.⁴⁴ That emotional stress leads to increased aggression, which can cause the animals to injure themselves and others.⁴⁵ These stressful living conditions combine with the fact that animals are fed unnatural diets and sometimes treated with growth hormones.⁴⁶ As a result, they grow disproportionately fast, leading to health problems and injuries, which in turn exacerbate the stresses of their living conditions.⁴⁷

3. *Water Pollution*

Water pollution is another threat posed by industrial agriculture.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.* at 9.

⁴¹ Stathopoulos, *supra* n. 17, at 412.

⁴² *Id.* at 411; David N. Cassuto, *Bred Meat: The Cultural Foundation of the Factory Farm*, 70 L. & Contemp. Probs. 59, 64–65 (2007). Veal crates are wooden crates in which baby cows are kept before slaughter. HSUS, *Veal*, http://www.humanesociety.org/issues/confinement_farm/facts/veal.html (Aug. 19, 2010) (accessed Apr. 7, 2012). Battery cages are wire cages so small that the chickens cannot spread their wings. HSUS, *Battery Cages*, http://www.humanesociety.org/issues/confinement_farm/facts/battery_cages.html (July 14, 2010) (accessed Apr. 7, 2012).

⁴³ Stathopoulos, *supra* n. 17, at 411.

⁴⁴ *Id.* at 412.

⁴⁵ *Id.*

⁴⁶ Sustainable Table, *The Issues: Feed*, <http://www.sustainabletable.org/issues/feed> (accessed Apr. 7, 2012).

⁴⁷ Belsandia, *Factory Farming: Animal Cruelty Is Standard Operating Procedure for 95–99% of Animals Raised for Food*, <http://www.belsandia.com/factory-farming-animal-cruelty.html> (accessed Apr. 7, 2012).

Virtually every facet of livestock production contributes to water pollution.⁴⁸ For example, its runoff causes diseases in animals and people.⁴⁹ Drinking water contaminated by animal agriculture has been linked to spontaneous abortions, blue-baby syndrome, and fatal bacterial outbreaks.⁵⁰ Agriculture is also the main source of water pollution in U.S. rivers.⁵¹ In Brazil, water pollution from agriculture has increased due to conversion of land to use as cattle pastures.⁵² This is due to the compacting of soil under cattle's hooves, which reduces the soil's ability to absorb water and causes erosion and silting of rivers.⁵³

B. Problems in the United States

The U.S. introduced industrial agriculture to the world. Industrial agriculture has become so prevalent in the U.S. that small family farms have become something of a rarity.⁵⁴ This Section looks at the domestic impacts of the spread of factory farming.

1. Animal Illnesses Caused by Feed

Agricultural animals are fed unnaturally fatty diets, and sometimes growth hormones.⁵⁵ Chickens and pigs often become so heavy that their legs cannot support their bodies to walk to food and water,⁵⁶ and cattle are fattened with a diet of hormones, rich grains,⁵⁷ and government-subsidized corn.⁵⁸ Cows' natural digestive systems are specialized to feed on grass. The corn-based diet causes severe health problems, including chronic digestive pains, intestinal ulcers, and fatal liver abscesses.⁵⁹

2. Antibiotics

Industrial agriculture's excessive use of antibiotics poses threats to

⁴⁸ Livestock Impacts on the Environment, *supra* n. 5, at 135–36 (detailing numerous points at which livestock production contaminates water resources).

⁴⁹ *Id.* at 140–42.

⁵⁰ Nat. Resources Def. Council, *Facts about Pollution from Livestock Farms*, <http://www.nrdc.org/water/pollution/ffarms.asp> (updated Jan. 13, 2011) (accessed Apr. 7, 2012).

⁵¹ Walker et al., *supra* n. 8, at 350.

⁵² Mia MacDonald & Justine Simon, *Cattle, Soybeanization, and Climate Change: Brazil's Agriculture Revolution* 9, 10 (Brighter Green 2011) (available at www.brightergreen.org/files/brazil_bg_pp_2011.pdf (accessed Apr. 7, 2012)).

⁵³ *Id.*

⁵⁴ John Ikerd, Paper Presentation, *Small Farms: The Foundation for Long-Run Food Security* (Peoria, Ill. Nov. 13–14, 2002) (text of paper available at <http://web.missouri.edu/~ikerdj/papers/llsmall.html> (accessed Apr. 7, 2012)).

⁵⁵ Sustainable Table, *The Issues: Feed*, *supra* n. 46; Sustainable Table, *The Issues: Artificial Hormones*, <http://www.sustainabletable.org/issues/hormones> (accessed Apr. 7, 2012).

⁵⁶ Belsandia, *supra* n. 47.

⁵⁷ *Id.*

⁵⁸ Sustainable Table, *The Issues: Feed*, *supra* n. 46.

⁵⁹ Stathopoulos, *supra* n. 17, at 416–17.

human and animal health. Approximately 80% of America's 29 million pounds of antibiotic consumption is used to hasten livestock growth.⁶⁰ Large amounts of antibiotics pass through the animals and end up in the ecosystem.⁶¹ This contributes to antibiotic resistance in bacteria, which makes it harder to treat human illnesses.⁶²

3. *Human Health Risks*

Industrial agriculture also creates a health risk for agricultural workers and people in surrounding communities.⁶³ One study estimates that as many as 70% of people working on confined animal feed lots (CAFOs) suffer from bronchitis.⁶⁴ Some of the gases produced in industrial animal agriculture can be fatal in high concentrations, and there have been at least eleven work-related deaths by asphyxiation in sewage lagoons.⁶⁵ Emissions from hog farms have also resulted in flu-like symptoms, brain damage, and death in as many as nineteen persons.⁶⁶ Because it is produced in such large volumes, animal waste is also expensive to transport, hard to store,⁶⁷ and quite toxic; the result is an ongoing disposal problem.⁶⁸

C. *Problems in Brazil*

As a rapidly developing country and an emerging world power, Brazil has also had to contend with the swift spread of industrial agriculture. This Section discusses some of the challenges Brazil has faced as a result.

1. *Deforestation*

Cattle ranching has contributed significantly to deforestation in the Amazon.⁶⁹ Deforestation directly contributes to climate change through the release of greenhouse gases during the act of clearing lands and burning trees,⁷⁰ and indirectly through the elimination of carbon sinks.⁷¹

⁶⁰ Nat. Resources Def. Council, *supra* n. 50.

⁶¹ Walker et al., *supra* n. 8 at 352.

⁶² Nat. Resources Def. Council, *supra* n. 50.

⁶³ *Air Pollution*, *supra* n. 4.

⁶⁴ Stephen Kirkhorn & Mark B. Schenker, *Human Health Effects of Agriculture: Physical Diseases and Illnesses* (available at <http://www.nasdonline.org/document/1836/d001772/human-health-effects-of-agriculture-physical-diseases-and.html> (accessed Apr. 7, 2012)).

⁶⁵ U.S. Dept. of Health & Human Servs., *National Institute for Occupational Safety and Health (NIOSH) Recommendations to the U.S. Department of Labor for Changes to Hazardous Orders* 88-89 (May 3, 2002) (available at <http://www.cdc.gov/niosh/docs/nioshrecsdolhaz/pdfs/dol-recomm.pdf> (accessed Apr. 7, 2012)).

⁶⁶ Nat. Resources Def. Council, *supra* n. 50.

⁶⁷ Walker et al., *supra* n. 8, at 352.

⁶⁸ *See e.g. id.* (stating that waste in storage pits leaks into groundwater and streams, and can pollute the air and water).

⁶⁹ Rhett A. Butler, *Deforestation in the Amazon*, <http://www.mongabay.com/brazil.html#cattle> (accessed Apr. 7, 2012).

⁷⁰ *See* Evelina Maciuleviciute, *Deforestation: What Is It? Who Cares? It Doesn't Affect Me ...*

In Brazil, the extent of deforestation in the Amazon has grown significantly since the 1970s,⁷² peaking in 1995 and again in 2004.⁷³ Although the rate of deforestation has since slowed,⁷⁴ Brazil still loses more rainforest per year than any other country in the world.⁷⁵

2. Loss of Biodiversity

A corollary concern to deforestation is biodiversity loss. One-fourth of the planet's biodiversity lives in the Amazon basin,⁷⁶ where new species are discovered almost every day.⁷⁷ Sixty percent of the Amazon rainforest is located in Brazil.⁷⁸ As animal agriculture in Brazil increases, native species of plants and animals lose their habitat or are killed to make room for livestock.⁷⁹ The conversion of native habitat to pasture has also resulted in a loss of biodiversity in the Cerrado grasslands—the “most biologically diverse savannah in the world.”⁸⁰ Experts predict that if current rates of loss continue, the Cerrado grasslands will be gone by 2050.⁸¹

Does

It?

<http://jrscience.wcp.muohio.edu/fieldcourses02/PapersCostaRicaArticles/Deforestation.WhatistWhoA.html> (2002) (accessed Apr. 7, 2012) (explaining that humans have released nitrogen, a greenhouse gas, into the atmosphere by clearing land and burning forests).

⁷¹ See Cassuto, *CAFO Hothouse*, *supra* n. 19, at 16 (noting that land used for livestock production might instead be used to sequester carbon).

⁷² Claudio Ferraz, *Explaining Agriculture Expansion and Deforestation: Evidence from the Brazilian Amazon—1980/98* 1 (IPEA 2000) (available at http://www.ipea.gov.br/pub/td/td_2001/td_0828.pdf (accessed Apr. 7, 2012)) (noting that “approximately 400,000 km² of tropical forest were cleared between 1978 and 1998,” resulting in an average of 20,000 km² per year).

⁷³ Mongabay.com, *Amazon Deforestation Rate Plunges 41 Percent*, <http://news.mongabay.com/2006/1026-brazil.html> (Oct. 26, 2006) (accessed Apr. 7, 2012).

⁷⁴ Rhett A. Butler, *Rainforests of Brazil—An Environmental Status Report*, <http://rainforests.mongabay.com/20brazil.htm> (updated Feb. 5, 2006) (accessed Apr. 7, 2012) (noting that Brazil's deforestation since 1990 was -8.1% and, in between 2000 and 2005, Brazil lost over 30,000 km² per year, a deforestation rate of -0.6% per year).

⁷⁵ Greenpeace Intl., *Slaughtering the Amazon* 3 (June 2009) (available at <http://www.greenpeace.org/international/en/publications/reports/slaughtering-the-amazon> (accessed Apr. 7, 2012)).

⁷⁶ Richard A. Betts et al., *The Future of the Amazon: New Perspectives from Climate, Ecosystem and Social Sciences*, 363 *Phil. Transactions Royal Socy. B* 1729, 1729 (2008) (available at <http://rstb.royalsocietypublishing.org/content/363/1498/1729.full.pdf> (accessed Apr. 7, 2012)).

⁷⁷ Press Release, World Wildlife Fund, *Amazing Discoveries in the Amazon: New Species Found Every Three Days over Last Decade* (Oct. 26, 2010) (available at <http://www.worldwildlife.org/who/media/press/2010/WWFPresitem18416.html> (accessed Apr. 7, 2012)).

⁷⁸ Slingenberg et al., *supra* n. 6, at 154.

⁷⁹ See Sci. Daily, *Brazilian Beef: Greater Impact on the Environment Than We Realize*, <http://www.sciencedaily.com/releases/2011/03/110304091504.htm> (Mar. 4, 2011) (accessed Apr. 7, 2012) (stating that beef production is the major cause of deforestation and explaining the consequences of deforestation in the Amazon, including burning rainforest to clear the land).

⁸⁰ MacDonald & Simon, *supra* n. 52, at 10.

⁸¹ *Id.* at 11.

3. *Cultural Displacement*

The spread of industrial agriculture also threatens indigenous cultures.⁸² For example, members of communities in the Cerrado grasslands are forced to move as their traditional homelands are converted to pasture.⁸³ Amazonian indigenous cultures also face threats from industrial agriculture. A vast majority of land federally demarcated in Brazil for indigenous cultures is located in the Amazon.⁸⁴ While this land is protected from deforestation, the correlating loss of biodiversity has long-lasting negative consequences on their religious, cultural, and everyday practices.⁸⁵

III. THE UNITED STATES AND INDUSTRIAL AGRICULTURE

The impact of industrial agriculture is perhaps most keenly visible in the U.S., where it has existed the longest. This Part examines the rise and spread of industrial agriculture, and the legal regime that enabled it.

A. *History of Industrial Agriculture in the United States*

As recently as a century ago, a farm consisted of many crops and lots of different animals.⁸⁶ Industrial agriculture changed all that. With the advent of synthetic fertilizers, crops no longer required rotation or manure, and farmers began focusing on corn and soy.⁸⁷ As part of the New Deal, corn became heavily subsidized.⁸⁸ Those subsidies resulted in a trend of major producers focusing on growing or raising only one agricultural product instead of the traditional, polycultural family farm.⁸⁹ By 2003, 82% of cattle and 50% of chickens were controlled by only four industrial producers.⁹⁰

B. *Current State of Industrial Agriculture in the United States*

The U.S. accounts for only 5% of the world's population while consuming

⁸² *Id.*

⁸³ *Id.* (noting that industrial agriculture continues to expand deeper into the Cerrado grasslands because it is easier to turn new lands into pastures than to reuse degraded land).

⁸⁴ Judith Wise, *Hunger and Thieves: Anticipating the Impact of WTO Subsidies Reform on Land and Survival in Brazil*, 31 *Am. Indian L. Rev.* 531, 540 (2006–2007) (noting that approximately 98.6% of land in the Amazon is demarcated for the indigenous population).

⁸⁵ See Marla Kerr, Student Author, *Ecotourism: Alleviating the Negative Effects of Deforestation on Indigenous Peoples in Latin America*, 14 *Colo. J. Intl. Envtl. L. & Policy* 335, 349–52 (2003) (noting that the consequences of deforestation can “lead to the extinction of entire societies”); R. Nasi et al., *Empty Forests, Empty Stomachs? Bushmeat and Livelihoods in the Congo and Amazon Basins*, 13 *Intl. Forestry Rev.* 355, 363 (2011) (available at <http://www.cifor.org/nc/online-library/browse/view-publication/publication/3580.html> (accessed Apr. 7, 2012)) (explaining that the demand for protein, and therefore increased pastures, is the main reason for deforestation and its “well known negative effects on wildlife and ecosystems” in the Amazon).

⁸⁶ Cassuto, *CAFO Hothouse*, *supra* n. 19, at 3.

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ *Id.* at 3–4.

⁹⁰ *Id.* at 3.

15% of the world's animals.⁹¹ Roughly 10 billion animals are slaughtered every year in the U.S.,⁹² which translates to roughly 1 million animals per hour.⁹³ Americans consume over 200 pounds of meat per year, per person.⁹⁴ This amounts to a daily intake of over a half-pound,⁹⁵ or 75 grams, of protein per person.⁹⁶ This rate of protein consumption is one-and-a-half times the federal government's recommended daily allowance (RDA).⁹⁷ On average, Americans consume 67% of their protein from animal sources,⁹⁸ while the world average is 34%.⁹⁹

High levels of meat consumption are associated with obesity, cardiovascular disease, stroke, diabetes, and some cancers.¹⁰⁰ Costs associated with treating these disorders exceed \$33 billion per year.¹⁰¹ Nevertheless, meat consumption remains on the rise.¹⁰² This is partly due to government subsidies, which lower the retail cost of animal products.¹⁰³ Neal Barnard notes that "subsidies for the production of meat and cheese reduce the costs of serving up fast food and pizza, and commodity programs send these foods into schools and hospitals."¹⁰⁴ The government also heavily subsidizes corn growers who provide the feed that enables factory farming.¹⁰⁵ Such subsidies lower production costs by 7 to 10%.¹⁰⁶

As discussed previously,¹⁰⁷ the factory-farm model is based on the theory that the production rate, or the rate at which meat is produced, should exceed the attrition rate, or the rate at which healthy animals are slaughtered.¹⁰⁸ To sustain this model, the U.S. relies on five key characteristics: minimal space

⁹¹ Bittman, *supra* n. 25.

⁹² *Id.*

⁹³ Matheny & Leahy, *supra* n. 1, at 325.

⁹⁴ Neal Barnard, *Do We Eat Too Much Meat?*, http://www.huffingtonpost.com/neal-barnard-md/american-diet-do-we-eat-too-much_b_805980.html (Jan. 12, 2011) (accessed Apr. 7, 2012).

⁹⁵ Stathopoulos, *supra* n. 17, at 408.

⁹⁶ Bittman, *supra* n. 25.

⁹⁷ Ctrs. for Disease Control & Prevention, *Nutrition for Everyone: Basics: Protein*, <http://www.cdc.gov/nutrition/everyone/basics/protein.html> (updated Oct. 31, 2011) (accessed Apr. 7, 2012).

⁹⁸ Walker et al., *supra* n. 8, at 349.

⁹⁹ *Id.*

¹⁰⁰ *Id.* at 104.

¹⁰¹ *Id.* at 349.

¹⁰² Carrie R. Daniel et al., *Trends in Meat Consumption in the United States*, 14 *Pub. Health Nutrition* 575, 575 (Apr. 2011) (available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3045642/pdf/nihms-253312.pdf> (accessed Apr. 7, 2012)).

¹⁰³ See Monica Eng, *U.S. Has Low Meat Prices, but Is It Worth the Cost?*, *Columbus Dispatch* (Columbus, Ohio) (Oct. 18, 2010) (available at <http://www.dispatch.com/content/stories/business/2010/10/18/u-s—has-low-meat-prices-but-is-it-worth-the-cost.html> (accessed Apr. 7, 2012)) (discussing how the meat industry relies heavily on cheap corn and soy feed, which requires billions in subsidies each year).

¹⁰⁴ Barnard, *supra* n. 94.

¹⁰⁵ Cassuto, *CAFO Hothouse*, *supra* n. 19, at 14–15.

¹⁰⁶ Sustainable Table, *The Issues: Feed*, *supra* n. 46.

¹⁰⁷ See *supra* pt. II.

¹⁰⁸ Stathopoulos, *supra* n. 17, at 411.

per animal, cheap and fatty food, growth hormones, antibiotics, and waste lagoons.¹⁰⁹

Minimal space per animal, achieved through intensive confinement, is the essence of modern industrial agriculture.¹¹⁰ Cheap, fatty foods and growth hormones significantly increase the rate of animal growth, thus shortening the amount of time before animals reach optimal slaughter weight.¹¹¹ Antibiotics are necessary to prevent diseases from spreading rapidly in such heavy confinement,¹¹² and also because of the health ailments (suffered by the animals) associated with this dietary regime.¹¹³ Waste lagoons are necessary because they enable factory farms to stay mostly out of reach of the Clean Water Act (CWA).¹¹⁴

The massive profit margins posted by industrial producers do not account for these externalized environmental and social costs, or the subsidies.¹¹⁵ Water consumption alone exemplifies the cost/subsidy cycle. For instance, it takes 23 gallons of water to produce one pound of tomatoes, but 5,214 gallons to produce one pound of beef.¹¹⁶ Further, contaminants from agribusiness account for more water pollution than all other industrial and municipal water sources combined.¹¹⁷ In short, industrial agriculture consumes more water than anything else and pollutes what it does not use.¹¹⁸

C. *The Legal Regime in the United States*

The legal regime in the U.S. does not adequately regulate industrial agriculture. The two agencies primarily responsible for its regulation are the Food and Drug Administration (FDA) and the Department of Agriculture (USDA).¹¹⁹ The Environmental Protection Agency (EPA) also retains some authority under the CWA, which requires permits for CAFOs to discharge into waters of the U.S.¹²⁰ However, as a general matter, waste lagoons and the

¹⁰⁹ *Id.*, at 413–20.

¹¹⁰ *Id.* at 410.

¹¹¹ *Id.* at 416–17.

¹¹² *Id.* at 418–19.

¹¹³ *Id.* at 417.

¹¹⁴ 33 C.F.R. § 328.3 (1998) (“Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA . . . are not waters of the United States.”); *see also* James W. Hayman, *Regulating Point-Source Dischargers to Groundwater Hydrologically Connected to Navigable Waters: An Unresolved Question of Environmental Protection Agency Authority under the Clean Water Act*, 5 Barry L. Rev. 95, 95–96 (2005) (noting that groundwater discharges from CAFOs are not subject to EPA regulation).

¹¹⁵ *See supra* pt. II (discussing environmental and social costs of industrial food production and how subsidies help the industry).

¹¹⁶ John Robbins, *Our Food, Our Future: Facts and Figures from “The Food Revolution”*, <http://www.vegsource.com/articles/factoids.htm> (accessed Apr. 7, 2012). Although some dispute these statistics, the fact remains that even with room for discrepancy, the numbers are hugely skewed.

¹¹⁷ PETA, *Meat Production Wastes Natural Resources*, <http://www.peta.org/issues/animals-used-for-food/meat-wastes-natural-resources.aspx> (accessed Apr. 7, 2012).

¹¹⁸ Cassuto, *CAFO Hothouse*, *supra* n. 19, at 9.

¹¹⁹ Stathopoulos, *supra* n. 17, at 409.

¹²⁰ 40 C.F.R. § 122.23 (2011). There is also a push for the EPA to regulate industrial

groundwater that they can pollute are not “waters of the United States” and thus fall outside the regulatory scope of the CWA.¹²¹

The FDA has authority to regulate animal feed.¹²² For example, the Mad Cow Disease scare led the FDA to ban feeding ruminants mammal tissue.¹²³ However, all non-ruminants, including non-mammals, can still consume mammal tissue, and ruminants can still consume non-mammals.¹²⁴ So, although a cow cannot directly eat cow tissue, it may still eat parts of a chicken that has been fed cow tissue.

The Food, Drug, and Cosmetic Act also approves the use of growth hormones in cattle, even though it bans growth hormones for poultry and pigs.¹²⁵ While it might seem significant that hormones are limited to cattle, the reason is that poultry and pigs can be profitably slaughtered in a matter of weeks or months without hormones, thus rendering hormones economically unnecessary.¹²⁶ Cattle, however, would require several years to grow to slaughter weight without hormones.¹²⁷

The FDA and USDA can also regulate antibiotics, but they use that

agriculture under the Clean Air Act, but the EPA currently does not do so. *See* Natl. Assn. of St. Depts. of Agric., *Environmental Groups Petition EPA to Regulate CAFOs under Clean Air Act*, <http://www.nasda.org/cms/7197/9060/24310/24344.aspx> (Sept. 29, 2009) (accessed Apr. 7, 2012).

¹²¹ 33 C.F.R. § 328.3; *see also* Hayman, *supra* n. 114, at 95–96 (noting that groundwater discharges from CAFOs are not subject to EPA regulation).

¹²² 21 U.S.C. §§ 331, 342, 360(b), 393 (2006); FDA, *FDA 101: Animal Feed*, <http://www.fda.gov/downloads/ForConsumers/ConsumerUpdates/UCM171028.pdf> (accessed Apr. 7, 2012).

¹²³ 21 C.F.R. § 589.2000 (2010); *see also* Sarah A. Lister & Geoffrey S. Becker, *Bovine Spongiform Encephalopathy (BSE, or “Mad Cow Disease”): Current and Proposed Safeguards 1* (Cong. Research Serv. May 18, 2007) (available at <http://www.nationalaglawcenter.org/assets/crs/RL32199.pdf> (accessed Apr. 7, 2012)) (explaining the lead up to the passage of 21 C.F.R. 589.2001); Michael Pollan, *The Omnivore’s Dilemma: A Natural History of Four Meals* 75 (Penguin Press 2006).

¹²⁴ Pollan, *supra* n. 124, at 76.

¹²⁵ *See* FDA, *The Use of Steroid Hormones for Growth Promotion in Food-Producing Animals*, <http://www.fda.gov/AnimalVeterinary/NewsEvents/FDAVeterinarianNewsletter/ucm110712.htm> (accessed Apr. 7, 2012) (giving examples of naturally occurring and synthetic hormones approved for use promoting beef growth); *see also* 21 C.F.R. §§ 522, 556, 558 (listing approved hormone products); Ctr. for Food Safety, *rBGH/Hormones*, <http://www.centerforfoodsafety.org/campaign/rbgh-hormones> (accessed Apr. 7, 2012) (explaining that the USDA does not allow producers to treat chickens or pigs with hormones, although it does allow the use of such hormones in cattle and sheep).

¹²⁶ *See* Ralph A. Earnst, *Chicken Meat Production in California*, <http://animalscience.ucdavis.edu/avian/pfs20.htm> (June 1995) (accessed Apr. 7, 2012) (explaining that chickens reach four pounds in forty-two days); USDA Econ. Research Serv., *Hogs: Background*, <http://www.ers.usda.gov/briefing/hogs/background.htm> (Mar. 23, 2009) (accessed Apr. 7, 2012) (explaining that twenty-two to twenty-six weeks are required to grow a pig to slaughter weight).

¹²⁷ *See* USDA, *United States Standards for Grades of Slaughter Cattle 7–8* (available at <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3062519> (July 1, 1996) (accessed Apr. 7, 2012)) (explaining the appropriate ages for slaughtering different types of cattle).

authority only sparingly.¹²⁸ The FDA sets thresholds for antibiotic levels in animals but measures only residue limits in animals at the time of slaughter.¹²⁹ Therefore, to bring their animals into compliance, producers withhold antibiotics from the animals prior to slaughter.¹³⁰ The agency is aware of and cooperates with this process, even recommending time limits for “withdrawing” the animals.¹³¹

The USDA regulates industrial agriculture under the Humane Methods of Slaughter Act (HMSA) and Twenty-Eight Hour Law, and by setting practice guidelines and standards. The HMSA¹³² controls how mammals are slaughtered, declaring four express reasons for requiring humane slaughter:

[to] prevent[] needless suffering; result[] in safer and better working conditions for persons engaged in the slaughtering industry; bring[] about improvement of products and economies in slaughtering operations; and produce[] other benefits for producers, processors, and consumers which tend to expedite an orderly flow of livestock and livestock products¹³³

Three of the four principle rationales for the law aim to benefit people, not animals. In reality, the law offers precious little in the way of animal welfare, and what little it provides comes only at the end of the animals’ lives. Further, because the HMSA excludes birds and fish, the Act protects only 1% of farmed animals.¹³⁴

The Twenty-Eight Hour Law controls how mammals are transported.¹³⁵ Like HMSA, this law only covers mammals.¹³⁶ Until recently, the USDA interpreted the Twenty-Eight Hour Law not to apply to trucks.¹³⁷ However, in 2006, upon petition from several animal groups, the USDA changed its regulation to include trucks within the purview of the Twenty-Eight Hour Law.¹³⁸ Despite this seeming victory, the Twenty-Eight Hour Law continues to accomplish very little. Poultry is still excluded,¹³⁹ and the last known

¹²⁸ See generally *e.g.* Animal Drug User Fee Act of 2003, 21 U.S.C. § 379(j)(12) (granting the FDA authority to collect fees for animal drug applications); see also PEW Charitable Trusts, *Antibiotic-Resistant Bacteria in Animals and Unnecessary Human Health Risks* 3, <http://www.saveantibiotics.org/resources/PewHumanHealthEvidencefactsheet7-14FINAL.pdf> (accessed Apr. 7, 2012) (discussing the poor oversight of drug use in industrial animal agriculture).

¹²⁹ See Dr. Jim Quigley, CalfNotes.com, *Calf Note #106—Calves and Antibiotic Residues*, <http://www.calfnotes.com/pdf/CN106.pdf> (Aug. 21, 2004) (accessed Apr. 7, 2012) (explaining how farmers should withdraw antibiotics from animals a month prior to slaughter in order to meet the FDA requirements regarding antibiotic residue).

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² 7 U.S.C. §§ 1901–1902 (2006).

¹³³ *Id.* at § 1901.

¹³⁴ Matheny & Leahy, *supra* n. 1, at 334–35.

¹³⁵ 49 U.S.C. § 80502 (2006).

¹³⁶ Matheny & Leahy, *supra* n. 1, at 335.

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.*

enforcement action was in 1960.¹⁴⁰ Further, the penalty is only between \$100 and \$500 per shipment (*not* per animal) and thus so minimal as to pose little or no deterrent.¹⁴¹

The USDA also requires “good” commercial practices.¹⁴² However, those practices permit the industry to maintain the status quo. For instance, the Poultry Best Commercial Practices permit the trimming of beaks in breeder chickens and turkeys to keep animals from hurting one another in their confinements.¹⁴³ Similarly, USDA standards for sewage lagoons are mostly structural and focused on preventing leakage rather than addressing the groundwater contamination and air pollution problems (among other issues) caused by the waste repositories.¹⁴⁴

Other environmental laws could potentially serve to regulate industrial agriculture but in practice have little effect. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)¹⁴⁵ (commonly known as Superfund), and the Emergency Planning and Community Right-to-Know Act (EPCRA)¹⁴⁶ require industries to report the release of hazardous substances to federal authorities. CERCLA defines the term “hazardous substance” to include Clean Air Act hazardous air pollutants.¹⁴⁷ However, the air pollution notification regulations under CERCLA and EPCRA exempt factory farms.¹⁴⁸ Perhaps most significantly, these exemptions apply to releases originating from animal waste.¹⁴⁹

IV. BRAZIL AND INDUSTRIAL AGRICULTURE

The rise of industrial agriculture is a comparatively recent development in Brazil, but it has grown quickly in power and scope. This Part looks at the history of industrial agriculture in Brazil and the accompanying legal regime.

¹⁴⁰ *Id.* at 335–36.

¹⁴¹ *Id.* at 336.

¹⁴² *See e.g.* Treatment of Live Poultry Before Slaughter, 70 Fed. Reg. 56624 (Sept. 28, 2005) (stating that “live poultry must be handled in a manner that is consistent with good commercial practices”).

¹⁴³ *See id.* (including a list of humane steps to be taken, with no reference to beak trimming); *see also* United Egg Producers, *Animal Husbandry Guidelines for U.S. Egg Laying Flocks* 8–9 (2010) (available at www.uepcertified.com/media/pdf/UEP-Animal-Welfare-Guidelines.pdf (accessed Apr. 7, 2012)) (explaining appropriate industry practice for beak trimming).

¹⁴⁴ Nat. Resources Conserv. Servs. Practice Standard, *Code 359 Waste Treatment Lagoons* (available at http://www.mda.state.md.us/pdf/macs_manual/2/359_waste_lagoon.pdf (accessed Apr. 7, 2012)).

¹⁴⁵ 42 U.S.C. §§ 9601, 9603 (2006).

¹⁴⁶ *Id.* at §§ 11001, 11004.

¹⁴⁷ *Id.* at § 9601(14)(E).

¹⁴⁸ *See* 33 C.F.R. § 328.3 (excluding waste lagoons from waters covered by the CWA); 40 C.F.R. § 122.23 (regulating factory farms, but allowing for discharge of pollutants); 33 C.F.R. § 328.3 (excluding waste lagoons from waters covered by the Clean Water Act); 40 C.F.R. §§ 302, 355 (2011) (exempting all but very large factory farms from notification requirements).

¹⁴⁹ Organic Consumers Assn., *U.S. De-Regulates Factory Farm Pollution*, http://www.organicconsumers.org/articles/article_16223.cfm (Dec. 19, 2008) (accessed Apr. 7, 2012).

A. History of Industrial Agriculture in Brazil

Industrial agriculture began to boom in Brazil in the late 1980s with the adoption of laissez-faire policies.¹⁵⁰ Prior to the 1980s, the Brazilian government was heavily involved in agriculture.¹⁵¹ However, with changing policies and a period of increased urbanization and foreign investments, agribusiness began to dominate agricultural markets.¹⁵² Indeed, the growth of Brazil's industrial agriculture is largely dependent on the country's ability to export its products.¹⁵³

B. Current State of Industrial Agriculture in Brazil

Brazil has a population of 200 million people and is the world's eighth largest economy and growing.¹⁵⁴ It is also the world's leading exporter of cattle and chicken.¹⁵⁵ Brazil's rise in status in the world of industrial agriculture is evidenced by shifts in the global market. Tyson Foods, an American company and one of the world's largest processors and marketers of meats,¹⁵⁶ plans to make Brazil its center for global exports.¹⁵⁷ Part of the reason for that decision is Brazil's already enormous agriculture sector: it has the largest cattle herd in the world with over 205 million head of cattle.¹⁵⁸ Measured in U.S. dollars, Brazil is the fifth largest producer of pig meat, fourth in turkey meat, third in chicken meat, and the second largest producer of cattle meat.¹⁵⁹ It exports over 650,000 live head of cattle and slaughters 43 million head for export every year.¹⁶⁰

Between 2007 and 2009, the Brazilian National Developmental Bank invested \$2.65 billion dollars in the three largest beef suppliers in exchange for company shares.¹⁶¹ In June 2010, the Agriculture and Livestock Plan doubled the available credits for the industry.¹⁶² Amidst this exponential

¹⁵⁰ Gibson, *supra* n. 13, at 851.

¹⁵¹ Fabio R. Chaddad & Marcos S. Jank, *The Evolution of Agricultural Policies and Agribusiness Development in Brazil*, 21 *Choices* 85, 85 (2d quarter 2006) (available at <http://www.choicesmagazine.org/2006-2/tilling/2006-2-08.pdf> (accessed Apr. 7, 2012)).

¹⁵² *Id.* at 85, 86, 89.

¹⁵³ *Id.* at 85.

¹⁵⁴ Central Intelligence Agency, *The World Factbook, South America: Brazil* (available at <https://www.cia.gov/library/publications/the-world-factbook/geos/br.html> (updated Mar. 1, 2012) (accessed Apr. 7, 2012)).

¹⁵⁵ Gibson, *supra* n. 13, at 855.

¹⁵⁶ Tyson, *About Tyson*, <http://www.tyson.com/About-Tyson.aspx> (accessed Apr. 7, 2012).

¹⁵⁷ Leonard, *supra* n. 15.

¹⁵⁸ Assn. of Braz. Beef Exporters, *Brazilian Beef Herd*, http://www.abiec.com.br/eng/3_rebanho.asp (accessed Apr. 7, 2012); Assn. of Braz. Beef Exporters, *Brazilian Livestock & Beef Industry*, http://www.abiec.com.br/eng2/3_livestock.asp (accessed Apr. 7, 2012).

¹⁵⁹ FAO, *FAOStat: Countries by Commodity*, <http://faostat.fao.org/site/339/default.aspx;selectCountry> rank in the world, by commodity, *select Brazil* (accessed Apr. 7, 2012).

¹⁶⁰ Assn. of Braz. Beef Exporters, *Structure of Brazilian Beef Chain*, www.abiec.com.br/download/Brazilian%20Beef%20Chain.pdf (accessed Apr. 7, 2012).

¹⁶¹ MacDonald & Simon, *supra* n. 52, at 5.

¹⁶² *Id.*

growth, Brazilian agriculture has also shifted toward the confinement model.¹⁶³

From 1995 to 2010, Brazil's cattle herd increased 27%, national beef production increased 38%, and the country's exports jumped by 731%.¹⁶⁴ "But, as result of high technology combined with the integration of livestock-agriculture-forestry, [Brazil's] pasture area decreased 2%."¹⁶⁵ Though its environmental and animal welfare laws are comparatively progressive, Brazil's regulatory regime has failed to curb the rise of industrial agriculture and the concomitant harms it brings.¹⁶⁶

C. *Brazil's Legal Regime*

The legal constructs governing Brazil's animal welfare date to 1934, when President Getulio Vargas established measures to prevent animal cruelty.¹⁶⁷ Brazil's animal welfare law states that it is actionably cruel to

maintain animals in anti-hygienic places or where they cannot breathe properly, move or rest, or are deprived of light . . .

abandon [an] animal that is ill, hurt, worn out or mutilated, and also not giv[e] to it everything that is possible, including veterinary assistance . . .
[or]

not giv[e] quick death, without long suffering, for an animal [for] which extermination is necessary for consumption or not¹⁶⁸

Animal and environmental welfare were also established in Brazil's Constitution of 1988. The Constitution provides a right to an "ecologically balanced environment which is an asset of common use and essential to a healthy quality of life, and both the Government and the community shall have the duty to defend and preserve it for present and future generations."¹⁶⁹ The state is further tasked with "protect[ing] fauna and flora, with prohibition, in the manner prescribed by law, of all practices which represent a risk to their ecological function, cause the extinction of a species, or subject an animal to cruelty."¹⁷⁰ This provision forms the platform for the country's environmental laws.

Possibly the most important federal animal protection law is the Environmental Crimes Act. Enacted in 1998, the Act is considered "one of the most modern and comprehensive legal texts focusing on environmental

¹⁶³ *Id.* at 1.

¹⁶⁴ Assn. of Braz. Beef Exporters, *Brazilian Livestock & Beef Industry*, *supra* n. 158.

¹⁶⁵ *Id.*

¹⁶⁶ *See e.g.* MacDonald & Simon, *supra* n. 52, at 32 (noting for example, that animal agriculture is responsible for 75% of Brazil's greenhouse gas emissions).

¹⁶⁷ Animal Leg. & Historical Ctr., *Brazil Federal Decree on Anti-Cruelty No. 24,645*, http://www.animallaw.info/nonus/administrative/adbrfeddec_24_645.htm (accessed Apr. 7, 2012).

¹⁶⁸ *Id.*

¹⁶⁹ Constituição Federal de 1988, artigo 225.

¹⁷⁰ *Id.* at art. 225, ¶ VII.

crime.”¹⁷¹ Amongst other prohibitions, it criminalizes abuse, mistreatment, injury, and mutilation of domestic animals.¹⁷² It is the only federal law that directly addresses cruelty to domestic animals.¹⁷³

As in the U.S., Brazilian law largely does not address animal welfare or cruelty as an issue with respect to agriculture.¹⁷⁴ Although Brazil, unlike the U.S., has laws specific to humane slaughter of poultry as well as mammals, the laws on transporting or exporting livestock exclude poultry, just as in the U.S.¹⁷⁵ Furthermore, neither of these laws affect animal welfare pre-transport and slaughter.¹⁷⁶

The Brazilian government has worked with the agriculture industry to codify commercial practices known as Good Agricultural Practices.¹⁷⁷ The Good Agricultural Practices recommend animal welfare practices that apply throughout the lifetime of the animal.¹⁷⁸ The agricultural industry, not the government, is at the forefront of designing and implementing these programs.¹⁷⁹ Although they are voluntary,¹⁸⁰ many Brazilian producers willingly participate.¹⁸¹ The standards meet or exceed the welfare standards of the European Union.¹⁸² Voluntary compliance with the more stringent

¹⁷¹ UN Evtl. Programme, *Brazil's Environmental Crimes Law*, <http://www.unep.org/dec/onlinemanual/Enforcement/NationalLawsRegulations/AppropriatePenalties/Resource/tabid/792/Default.aspx> (accessed Apr. 7, 2012).

¹⁷² Animal Leg. & Historical Ctr., *Environmental Crimes Law of Brazil (1999)*, <http://www.animallaw.info/nonus/statutes/stbrecl1999.htm> (accessed Apr. 7, 2012).

¹⁷³ See Animal Leg. & Historical Ctr., *Introduction to Brazilian Animal Law*, <http://www.animallaw.info/nonus/articles/ovbrazil.htm> (accessed Apr. 7, 2012) (noting that “definitions of abuse and mistreatment against animals” can be found in two federal sources, the Environmental Crimes Act and another bill that has yet to be adopted).

¹⁷⁴ See Wageningen UR Livestock Research, *supra* n. 14, at 7 (noting that besides animal density “Brazil does not have legislation on chicken welfare on the farm or transport”).

¹⁷⁵ See Decreto 94.554, de 24.07.1987 (addressing standards for housing and slaughter of commercial animals); Portaria 85, de 18.11.1988 (concerning standards for general conditions of operation for small and averaged-sized slaughter houses); Instrução Normativa 3, de 17.01.2000 (addressing minimum requirements for humane slaughter); Portaria 711, de 01.11.1995 (addressing standardization of swine processing).

¹⁷⁶ See Instrução Normativa 16, de 02.04.2008 (concerning exported animal products).

¹⁷⁷ See e.g. Marcio Portocarrero, PowerPoint, *Brazilian Good Agricultural Practices to Improve the Farm Animal Welfare Standards* slide 11 (Conf. on the Global Trade & Farm Animal Welfare Jan. 20, 2009) (available at http://ec.europa.eu/food/animal/welfare/seminars/docs/2021012009_conf_global_trade_farm_animal_wel_presentation_gap.pdf (accessed Apr. 7, 2012)) (describing “Brazilian Good Agricultural Practices” as “a set of guidelines based on voluntary on-farm production quality control programme, to make production systems more efficient and viable; respect animal welfare; assure safe food produced in sustainable ways”).

¹⁷⁸ *Id.* at slide 23.

¹⁷⁹ See *id.* at slides 19–21, 27 (discussing organizations’ involvement with the Brazilian government in implementing Good Agricultural Practices).

¹⁸⁰ *Id.* at slide 8.

¹⁸¹ See *id.* at slide 27 (listing the Brazilian Poultry Association and the Brazilian Association of Swine Breeders as ministerial partners).

¹⁸² See Wageningen UR Livestock Research, *supra* n. 14, at 6, 7 (explaining the need for meat exporters to improve animal welfare standards to comply with EU import requirements, and noting animal density as an example where Brazil’s standards are higher than the EU’s).

standards is at least partially due to the fact that the Brazilian market is heavily dependent on exports¹⁸³ and needs these high standards to be competitive in the EU market.¹⁸⁴

In spite of the widespread compliance with EU standards, animal mistreatment is still common in Brazilian factory farms. For instance, battery cages and gestation crates are still used by the millions.¹⁸⁵ With growing awareness of the gaps in Brazil's regulatory regime, the Ministry of Agriculture created the Permanent Technical Committee on Animal Welfare in 2001 to explore and analyze animal welfare issues.¹⁸⁶ The Committee's expressed goal is to establish technical guidelines and standards for animal welfare.¹⁸⁷

V. NEITHER COUNTRY REGULATES INDUSTRIAL AGRICULTURE EFFECTIVELY

Industrial agriculture is ineffectively regulated in the U.S. and Brazil. In both countries, almost all federal welfare laws applied to animal agriculture focus on slaughter and transport, while ignoring the most egregious environmental impacts and abuse of animals. First, existing U.S. regulations are too specific and narrow to address the myriad of problems caused by factory farming. This is partly due to a permissive regulatory environment and partly to a lack of teeth in the enabling statutes.¹⁸⁸

Second, Brazil has a more encompassing regulatory regime. Fewer animals are exempted, and generally the protections are more stringent, even if only slightly, than in the U.S. But other environmental pressures in Brazil—such as deforestation caused by grazing—encourage confined agriculture. Regulations specific to issues posed by industrial factory farming are still being developed, and it remains to be seen where Brazil will go from here.

VI. CONCLUSION

The inhumane treatment of animals has come to be viewed as the inevitable byproduct of efficient agriculture. As a result, industrial agriculture has flourished and become interwoven with the global economy. Now, as the flaws in the industrial model become increasingly clear, so do the risks

¹⁸³ Chaddad & Jank, *supra* n. 151, at 85.

¹⁸⁴ Wageningen UR Livestock Research, *supra* n. 14, at 6.

¹⁸⁵ Humane Socy. Intl., *Intensive Confinement of Farm Animals in Brazil*, http://www.hsi.org/issues/farm_animal_confinement/facts/brazil_campaign_english.html (Aug. 17, 2010) (accessed Apr. 7, 2012); Humane Socy. Intl., *Battery Cages in Brazil*, http://www.hsi.org/portuguese/issues/battery_cages_brazil.html (Sept. 11, 2008) (accessed Apr. 7, 2012).

¹⁸⁶ Tabet Advogados Assessoria Ambiental, *Environmental Bulletin* 6 (July 15, 2011) (available at <http://www.riela.org/newsletters/Tabet%20Advogados-Boletim-2011.07.15-e.pdf> (accessed Apr. 7, 2012)).

¹⁸⁷ *Id.*

¹⁸⁸ *See e.g.* 40 C.F.R. §§ 302, 355 (listing penalties that include provisions that shield reporters of hazardous waste spillage from criminal prosecution).

inherent in moving away from that model.

Industrial agriculture has grown globally ascendant because its drawbacks have been deliberately obscured. This strategy has allowed the public to embrace ignorance and to assume that the proliferation of factory farms was both safe and desirable. But, as Aldo Leopold once observed, “too much safety seems to yield only danger in the long run.”¹⁸⁹

Society has grown to depend on and expect cheap, mass-produced meat, which in turn requires enormous amounts of soy and corn and then requires government subsidies, inhumane confinement agriculture, and antibiotics. The model is not efficient by any metric, and the environmental and ethical consequences are catastrophic. As factory farming continues its global spread, the U.S. and Brazil have separate yet linked responsibilities. The U.S., with consumption patterns that have set a dubious and unsustainable standard for the world, must come to terms with its legacy and the future that legacy has wrought. Brazil, for its part, faces the burden of emerging as a global power in a time of unprecedented global environmental and economic crisis. Both challenges are daunting and the costs dear. But the costs of failure—to humans, animals, and the environment—are incalculable.

¹⁸⁹ Aldo Leopold, *A Sand County Almanac* 141 (Oxford U. Press 1966).