

# Industrial meat production: reshaping the world in its own image

Perspectives from the Global South and the path to an alternative model of sustainable livestock farming

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## 1. Introduction

Since the Paris Climate Agreement in 2015, different urban and rural social groups and Indigenous communities, aware of the challenges of limiting global warming to 1.5 degrees Celsius, have been working toward transforming unsustainable global patterns of production and consumption, and one of the goals being debated around the world is the necessary reduction in meat consumption.

The large-scale production of animal protein (beef, pork, poultry and fish) is the largest contributor to deforestation, the

degradation of biomes and species loss. This activity uses soil and water inefficiently and leads to the appropriation of land in the world's last remaining forests and peasant and Indigenous communities around the world, especially in the Global South. It displaces populations and impoverishes communities and is one of the main drivers of greenhouse gas emissions.

The recent coronavirus pandemic demonstrated the connection – already noted by diverse scientists – between industrial agribusiness and viral

epidemiology. The ecological alteration of territories, overcrowding of animals, and excessive use of antibiotics have generated the necessary conditions for the development of these diseases, and at the same time have destroyed the healthcare, economic, social and cultural conditions needed to face these situations. In particular, overcrowding at factory farms is “the ideal breeding ground for the evolution of these new pathogens,” [1] as proven by the emergence of African swine fever, which, while not dangerous to humans, has wiped out a quarter



Indigenous women in Kenya with their livestock. **Indigenous Information Network**



Extensive cattle pastures in the Democratic Republic of the Congo. **Olive Imani/CTA**



A woman with her water buffalo. **Jharendu Pant/Flickr**

of global pig herds over the last decade. [2]

Although this information is available to increasing numbers of people and being disseminated by more and more organizations, including the United Nations, demand for animal protein continues to rise. The excessive consumption of animal products, particularly industrialized meat and dairy products, is associated with the pandemic of obesity and non-communicable diseases such as diabetes, cardiovascular

disease and several types of cancer.

Global Forest Coalition (GFC) held a series of “Open dialogues on unsustainable livestock farming and alternatives” by region, beginning in Africa (in Addis Ababa, Ethiopia, in September 2019), Latin America (in Santiago de Chile in December 2019) and Asia (in Bogor, Indonesia, in February 2020). The dialogues aimed to promote a better understanding of the dynamics of meat production,

commercialization and consumption and how to contribute to a 75% reduction in greenhouse gas emissions by 2050 to keep global warming below 1.5 degrees Celsius.

Participating in the dialogues were non-governmental organizations and representatives of peasant communities, Indigenous Peoples, pastoralists, women’s groups, activists, academics and research centers directly and indirectly related to the Coalition.

## 2. Unsustainable meat production around the world

At the three regional dialogues, data was shared that describes the reality of food production and consumption around the world, particularly large-scale beef production.

Today, meat production is 470% higher than it was 50 years ago, having increased from 70 million tons annually to more than 330 million tons in 2017. In this same period, the global population doubled. This growth in production is directly associated with increased consumption; according to the UN Food and Agriculture Organization (FAO), the three largest meat consumers per capita are the United States, Australia and New Zealand, which exceeded 100 kg of meat per person per year. [3]

The FAO and OECD project that meat consumption will continue to increase: by 2026, beef production will grow by 6% in developed countries and around 17% in developing countries; Asia alone will see a 44% increase. Global pork consumption will decline slightly by 2026, although it will continue to increase in Latin America, where it has risen rapidly in recent years, driven by domestic production and low prices. Poultry meat consumption will increase by 45% regardless of region or income level. [4]

Increased large-scale meat production and consumption are directly associated with the expansion of monocultures of genetically-modified organisms aimed largely at producing food for animals farmed in

overcrowded conditions. Today, between 70 and 75% of the world’s soy production is used for animal feed.

The companies involved in the soy and meat industries, which we generally refer to as “agribusiness,” claim that they are going to combat global hunger. However, according to FAO’s latest estimates, in 2017, approximately 10% of the world’s population – 770 million people – experienced serious food insecurity. At the regional level, the figures range from 1.4% in North America and Europe to nearly 30% in Africa. As with malnutrition, serious food insecurity has increased at the global level, driven by the trends seen in Africa and Latin America. [5] Meanwhile, nearly

Deforestation in the Chaco in Paraguay for cattle ranching. [Peer V/Wikimedia Commons](#)



1.4 billion people over the age of 18 suffer from obesity, an illness directly associated with poor nutrition as a result of the excessive consumption of meat and dairy and frequent consumption of ultra-processed foods. [6]

Today, 77% of the world's cultivated land is used for feeding livestock, which provide 17% of the calories and 33% of the protein produced globally. The remaining 23% of cultivated land is used for other products that together provide humanity with 83% of its calories and 67% of its protein. [7]

Governments around the world provide various subsidies and stimulus packages for large-scale meat production; the larger the business or the greater the political weight of the economic sector, the greater the subsidy. Although no data exists on the indirect subsidies received by these industries, in 2013, direct subsidies to companies associated with meat and dairy production in OECD countries totaled \$53 billion. [8]

With the growth of large-scale production of genetically-modified vegetable protein, animal feed and meat, the accompanying increase in malnutrition, poor nutrition and serious food insecurity constitutes an economic blunder and one of the worst

contradictions facing humanity. While we annihilate other species to increase our food production, each day we find new evidence of the impact of these modes of production on the world's biomes, human health, animal welfare, and the speed with which the climate crisis is worsening. The meat and dairy industries are one of the largest contributors to greenhouse gas emissions, accounting for 14% of total emissions and nearly half of methane emissions. In 2016, the 10 largest companies in these industries produced 747 million tons of CO<sub>2</sub> per year (the five largest produce more emissions than ExxonMobil, Shell or BP). [9]

Amid this process of destruction, we are faced with a pandemic of a zoonotic disease, COVID-19. While the cause of this particular virus is not yet proven, there is much scientific evidence that points towards the intensive livestock farming industry, since it is in general a major source of zoonoses such as the coronavirus. Moreover, the risk of such pandemics is increasing due to the growing emergence of antibiotic-resistant microorganisms; in April of 2019, the UN Interagency Coordination Group (IACG) was already warning that there is "no time to wait" given the risks posed by antibiotic-resistant infections in the near future. [10] Today, some 700,000 people die each year due

to antibiotic resistance, and by 2050, that number could reach 10 million per year, more than the amount that dies from cancer.

The use of antibiotics in meat production continues to grow; in the European Union today, more than 75% of all antibiotics are used in primary production; [11] the projection for emerging countries (Brazil, Russia, India, China and South Africa) is a 99% increase by 2030 due to the expansion of livestock production. [12]

This meat production is also associated with a food distribution system that concentrates capital and weakens or eliminates small local markets and retailers in cities. These large supply chains practice notably aggressive business practices, evade taxes, fail to comply with the law in their personnel policies and threaten human health and the traditional and independent ways of feeding ourselves. Thus, one of the recurring themes in GFC's open dialogues was the support that these transnational companies receive through "free trade" agreements. The provisions of these new agreements turn most developing countries into a source of cheap labor at the service of transnational companies. An example of this is the EU-Mercosur Free Trade Agreement that was approved in July of 2019 and has yet to be



Cattle in South Africa. [FourAMinthemorning/Flickr](#)

ratified by the countries of the two trade blocks. If ultimately approved, the new provisions would generate the conditions for an increase in greenhouse gas emissions of 8.7 million tons; 82% of these emissions would arise from livestock farming. [13]

A very important aspect of the debate around meat production

today is related to the defense of animal welfare and animal rights. Increasing numbers of people throughout the world have been opting for vegan and vegetarian diets. Proponents of these diets argue that the simple act of separating mothers from their young for milking is a violation of the rights of the animal, not to mention slaughtering them.

From another perspective, those who defend omnivore diets for humans recognize that animal husbandry is more efficient and has a better impact on territories if animal welfare is protected. This debate, which is present on all continents, is far from being over.

## Africa

The first dialogue was held in Addis Ababa, Ethiopia, on 2 September 2019 during the 3<sup>rd</sup> Africa Animal Welfare Conference. Participants included around 90 representatives of Indigenous Peoples, research institutions, multilateral organizations and NGOs from around Africa and other continents as well.

A large percentage of families in Africa engage in small-scale subsistence agriculture. Pastoral communities still subsist in Africa whose work is characterized by "extensive redistributive practices, as livestock were shared, loaned and redistributed across multiple

ownership arrangements, facilitated by segmentary lineage structures and age-groups with specific responsibilities. This allowed for horizontal redistribution, friendship alliances across territories and marriage contracts that allocated stock. While such arrangements have declined, due to the individualisation and commoditisation of pastoral production, the cultural values and embedded practices still remain, and are often remobilised in times of severe crisis." [14] However, modern agriculture (especially sugarcane and oil palm monocultures) and large-scale

livestock farming are having a major impact on these practices.

Ethiopia provides a striking example of this reality: 80% of the country's population lives in rural areas and relies largely on natural resources; more than 95% of farmers in Ethiopia operate near the subsistence level, relying on rainwater instead of irrigation; and three quarters of the country's livestock are raised by small producers in mixed livestock farming systems. In contrast, agricultural products produced by companies with unsustainable practices account for 60% of Ethiopia's exports and





ICCA guardians in the Bale Mountains, Ethiopia, defend their land from livestock overgrazing and other impacts. **Simone Lovera/GFC**

nearly half of its GDP. In addition to livestock, other primary exports include coffee, beans, molasses, oleaginous seeds and cotton. The government, private investors and some development agencies are pursuing an industrialized livestock sector to promote production for export. [15]

Meanwhile, the growing supply of beef imported from Argentina, the United States and Ukraine is modifying the traditional diet, introducing Western habits that are today globalized ones: large quantities of meat and dairy, sugars and ultra-processed foods. This change in the diet favors the expansion of this unsustainable production with a dynamic that varies from one region to another. However, there is little debate on the issue, and the impacts are largely hidden. Industrial production is marketed and sold with little to no regulations, and it is still not a main issue for defenders of the climate, biodiversity and forest protection, or even groups that work on animal welfare.

Some characteristics of the system of meat production and consumption in Africa include the growing consumption of meat (beef, pork, poultry and fish) and dairy in some countries in recent years – by 100% in Morocco. Some Indigenous communities such as the Samburu in Kenya only consume meat and dairy, and hence a diet based on vegetables is not really an option, although they are also affected by the problems of climate change. With each successive drought, they lose a greater percentage of animals, a problem that is worsened by succumbing to government pressure to swap the drought-resistant breeds of sheep and goats that they traditionally raised with genetically patented breeds that were supposed to increase productivity, but that instead generated losses.

Sustainable livestock farming in territories conserved by Indigenous and local communities has favored biodiversity conservation. Ancient cultural practices also exist that contribute to a balanced diet, such as the tradition of fasting among Coptic

Christians in Ethiopia, which significantly reduces meat consumption. Meanwhile, industrial production generates the destruction of territories; an example of this is the expansion of sugarcane monocultures in the traditionally pastoralist region of Semien Omo in southeast Ethiopia. The extractive infrastructure of irrigation has led to the disappearance of flood plains and grazing lands, growing desertification of the territory and the disappearance of a more than two-thousand-year-old culture.

These territorial conflicts include the system of protected areas; lacking land for grazing, the communities are forced to move to other areas, including some protected areas, to carry out their activities.

Another example is the loss of local trade; in South Africa, 80% of the country's food is processed by 20% of companies. The communities are unaware of the origin of their food, especially where and how the meat and dairy products they consume were produced.

## Latin America

This dialogue was held on 4 December 2019 during the People's Summit in Santiago de Chile. Participants included more than 35 representatives of Indigenous Peoples, peasants' movements, women's groups, research institutions and NGOs from around the continent. It was recognized that Latin America is currently a territory in which production is characterized by the looting of the common goods of the population: mega-mining (including fracking), genetically-modified monocultures and large-scale meat production are the drivers of the world's fastest deforestation process in 2019, including the barbaric practice of setting fire to forests and fields, as we saw with the 20 million hectares burned in the Amazon that year.

Global agribusiness has handed over land in Latin America to

large expanses of direct seeding of genetically-modified soy and corn and forest plantations (pine and eucalyptus) for biomass to generate energy and cellulose pulp. The region also has the world's largest meat processing industry, JBS (one of the suppliers for McDonald's). This production has led to a steady deterioration of the food sovereignty of countries and local communities, and it has a direct impact on the human right to adequate food and nutrition, contradicting Sustainable Development Goal 2 of the UN's Agenda 2030. [16]

In Latin America, the production and consumption of meat is characterized by large expanses of monocultures that use vast quantities of highly toxic poisons. They sicken and kill not only the population that lives and in and around these areas, but also those who consume the animals

that are fed with that production (including abroad, when meat is exported); in general, the poorest population consumes pigs and chickens that are fed with GMO feedstock and that is the cheapest meat.

The continent demonstrates the enormous contradiction between two models of production: agribusiness and peasant and Indigenous agriculture. For example, in Paraguay, a peasant farm that traditionally consists of a maximum of three to 10 hectares generally has one or two cattle, usually dairy cows; meanwhile, the economic might of commercial livestock farming is such that it encompasses nearly 15 million head of cattle, a rate of two animals per inhabitant, as well as a ranching territory of 17 million hectares. Industrial ranching slaughters 2.5 million head of cattle per year and



Francisco Manquecheo speaking in Chile. **Oliver Munnion/GFC**



Dialogue participants in Chile. **Oliver Munnion/GFC**



exports 380,000 tons of meat per year (over \$1 billion), [17] making it the world's seventh largest beef exporter.

With regard to issues of gender in the region, women are generally responsible for family agroecological production, and they are also the direct victims of the impacts of agribusiness. For example, in Bolivia, women in rural areas suffer from higher rates of cancer. In that country, the prospect of meat exports to China motivated a change in forest laws and fires broke out that “coincidentally” favored the expansion of commercial livestock farming. This model affects both producer and consumer countries (for example, Paraguayan beef is consumed in Chile).

The European Union invests millions of dollars in “climate

change mitigation,” however, barely 1% of that investment is aimed at promoting diet change, and the massive trade block continues to promote the ratification of a free trade agreement with Mercosur to continue to expand the meat and soy business in South America, offering perverse subsidies and incentives to an industry that contributes to deforestation [18] and completely contradicts Sustainable Development Goals 13 on climate change and 15 on terrestrial ecosystems. [19] It is clear that Latin American “democracies” are strongly shaped by the hand of the transnational companies and agribusiness players that have been behind parliamentary coups d'état against progressive presidents. We have seen the repression and murder of environmental activists, millions of hectares leveled by bulldozers

or by fires in the Amazon, growing poverty, and communities expelled from land seized by a model of production and consumption that poses such a grave threat to all of us.

Today, big agribusiness companies control governments and political decisions. They ensure little or no tax pressure, subsidies in different phases of the value chain of their merchandise and benefit from infrastructure efforts designed for them instead of the majority. Throughout Latin America, with the health and food crisis implied by the pandemic, governments are taking out new loans (that must be paid by the people) instead of undertaking tax reforms that would involve the wealthiest paying more to address the crisis.



Small-scale livestock farming in Paraguay. Inés Franceschelli



Small-scale livestock farming in Bolivia. United Nations Photo/Flickr

The last dialogue of the initial series was held on 15 February 2020 in Bogor, Indonesia. [20] Participants consisted of more than 30 representatives of women's groups, research institutions and NGOs. It was demonstrated that the increase in per capita meat production and consumption has been particularly accelerated in Asia, with a steadily rising curve over the last 50 years; also accelerated has been the consumption of dairy and eggs. The increase in consumption has been particularly rapid in China, South Korea and Vietnam.

This process of "Westernization" of the diet, marked by increased beef and pork consumption, has been led by China, where economic growth has been reflected in a dramatic expansion of fast food consumption. While in that country, the mega-chains

of factory-farmed meat draw on local capital, other transnational industrial food companies such as KFC or McDonald's have subsidiaries in most non-communist Asian countries.

The increase in grazing or the planting pastures for cattle over large expanses has led to the degradation of ecosystems, the destruction of soils and the loss of adapted breeds of animals and crops, as well as traditional knowledge.

Meanwhile, Asia is among the largest markets for Latin American commodities, especially genetically-modified soy and corn. Most of these imports are for animal feed.

Asia is also under pressure to adopt "free trade" agreements. Currently, 16 countries are negotiating a treaty known as the

(Regional Comprehensive Economic Partnership - RCEP), including India, China, Japan, South Korea, New Zealand and Australia. Various civil society organizations have been voicing concerns that the provisions of the RCEP "could undermine access to lower-cost generic medications, negatively impact the rights of farmers and Indigenous Peoples to seed and food sovereignty, lead to privatizations of public services, reduce salaries for workers and restrict the ability of governments to regulate public policies, leaving them vulnerable to international lawsuits in secret courts." [21]

Asia is a densely populated continent where food security and sovereignty are of utmost importance and which faces inequity (poor distribution) and inequality. On one hand, a large part of the population suffers

## Connecting Traditional Pastoral Communities with Climate Change (Zhao Zhung, Green Camel-China)

In China, the organization Green Camel has been working for 13 years in a Tibetan province called Maqu in the extreme eastern region of the Tibetan Plain at the Yellow River basin. In recent years, the prairies have faced serious threats and degradation. The group works with local communities on Indigenous knowledge so that they can recognize their own history and culture and thus generate their own solutions to climate change, which is now beginning to be recognized.

The pastoral communities have learned to monitor the climate and quality of the pastures in order to better understand climate change and its impacts. At the same time, thanks to this "citizen science," the communities are able to make their own decisions about the management of their territory, including its conservation and with the inclusion of women in the different activities.

For more information, visit: <http://www.gcbcn.org/en/>



Milking a yak in China. **Green Camel**



from scarcity, while on the other, there is a oversupply.

China, the world's largest economy, accounts for 32% of all inhabitants of Asia. It is an immense importer of meat, dairy and soy, among other products; its imports have risen with the free trade agreements with Australia and New Zealand and the search to secure new food sources for people and animals.

In this search, China has been implementing a mega-infrastructure development program known as the Belt and Road Initiative (BRI), also called the New Silk Road, focused on the promotion of manufacturing, trade and investment and physical and digital integration with international markets. [22] It proposes to form a land "belt" connecting China with Europe and a "road" running across the Indian Ocean to Africa through the Mediterranean and across the Pacific Ocean to Oceania and Latin America. The initiative

involves more than 90 countries. Related to this project is the growth in Chinese agricultural investment by private companies that in the last 10 years have been buying global production chains of meat and grains, and the advance in control over the global seeds and agrotoxins industry through the acquisition of shares in the Swiss firm Syngenta.

China is a vast country of major contrasts; its Indigenous Peoples are suffering due to reduced sources of water, pasture and their ability to feed their animals as they did before, and they may not recognize climate change as a cause. Focusing on Indigenous knowledge and strengthening it in pastoral communities to learn about their history and culture would lead to broader discussions in the community that may generate solutions to climate change and thus allow these people to make decisions about the protection of their territories (see Box on p8).

Different countries report forest loss, high concentration of land, population displacement and social conflict, as well as a growing presence of transnationals in the agrifood industry; for example, Cargill, which operates with US capital, controls 31% of agriculture in the Philippines and operates in an alliance with Beidahuang in China to produce genetically-modified rice ("golden rice").

This region has been particularly affected by epidemics like the swine flu and avian flu, which have been grave reminders of the high zoosanitary risks of factory farming. Swine flu alone killed 400 million pigs in Indonesia, China and Mongolia. The current coronavirus pandemic also arose on this continent. The three diseases are examples of the imbalance caused by this model of production.



Asian regional meeting in Bogor.  
Fahmi/WAHLI



Meat market in China. Veronica Belmont/Flickr

### 3. Conclusions: Proposals for transformation

In all three dialogues, movements and activists from around the world suggested proposals, all of which emphasized the urgent need for transformations and the need to involve women in decision-making. They also agreed that all of the initiatives should include the objective of halting climate change and the

dimensions of animal welfare and its relationship to human health. Other common aspects in the three dialogues were the need to raise awareness, bringing together the different themes of industrial livestock farming and its relationship to climate change and environmental destruction and the need to protect pastoral

communities and traditional knowledge for the recovery of ecosystems and food security and sovereignty.

Below is a synthesis of the main proposals suggested in the dialogues.

#### Regarding production and land

It is necessary to promote the replacement of conventional production systems with production using agroecological and traditional systems, to defend in all arenas access to land and territory by peasant and Indigenous communities and to combat large land owners and their expansion.

Active mechanisms must be established to eradicate the use of agrotoxins and promote agroecology and traditional agriculture and aspects that strengthen it: recovering crops

and animal breeds that have disappeared; recovering traditional knowledge and natural medicine; recovering local culinary traditions; promoting local markets; and recovering, protecting and promoting the use of native and local seeds and organizing their expansion.

It is recognized that increasing and strengthening alliances from the grassroots is important for encouraging and supporting association among small producers for production and trade (cooperatives and other

forms). Also, establishing mechanisms of connection between producers and consumers, bringing the countryside and the city closer together.

We must find ways to foster settlement and seek public policies that reverse the process of urbanization (“depeasantization”) occurring in recent decades, to strengthen the role of women in decision-making regarding politics, production and food, and make visible issues of gender in the area of food production systems including livestock farming and pastoralism.

It is desirable to increase and implement climate innovation technologies such as solar panels and other sources of renewable energy that promote autonomous or off-the-grid systems, as well as to generate a clearer connection at all levels between pastoralism, livestock farming, climate change, health, traditional knowledge, and deforestation.



A woman and her goats in India. Prabhu B Doss/Flickr



## Regarding politics

It is necessary to establish better mechanisms of influence in local (municipal and territorial) governments to defend land used for sustainable production and impose real limits on unsustainable agricultural production. We must also denounce government incentives that support unsustainable production and lobby to redirect them, pressure governments to increase research and development with public – instead of private – financing and eliminate the global

financialization of food supply chains.

It is also important to generate greater knowledge about the role of banks in the livestock industry, recognize the companies involved and promote policies of higher taxation on unhealthy foods and less on agroecological and traditional production. Public food purchasing (for militaries, schools and hospitals) should be encouraged to use small producers.

We must uphold and strengthen campaigning against the ratification of “free trade” agreements such as the EU-Mercosur FTA and the Regional Comprehensive Economic Partnership (RCEP). At the international level, we must insist on the involvement of the United Nations in advocating for sustainable agrifood systems and make progress in the use of litigation as a strategy to pressure businesses and businesspeople.

## Regarding the media and consumer awareness

To combat the unsustainable model of livestock production, it is also crucial to promote conscious and responsible consumption, including awareness of the need to reduce meat and dairy consumption, and to inform consumers of the health and environmental impacts of consuming factory-farmed meat and discourage the consumption of imported food. We must expose the industry with regard to the following:

- poisoning of feedstock and hence factory-farmed meat;
- the impact of excessive meat consumption;
- soil degradation;
- loss of biomes, including deforestation and biodiversity loss;
- loss and contamination of potable water.

We must also generate collective commitments to disseminate information based on the experiences of people in the territories as an alternative to studies that laud companies and “wash away their sins,” and strengthen alliances with opinion leaders such as nutritionists and doctors. It is necessary to bring the perspectives of customary

norms and traditional conservation practices (that predate modern science) closer to scientific perspectives and close the gap between these two “worlds” to promote collaboration between the two currents of knowledge, both of which are essential for transforming production and consumption.

Organic farm in Ghana. **Global Justice Now/Flickr**



Only then, through greater articulation and strengthening of networks, can we build strategies to provide a counterweight to a

growing industry that is reshaping the world's social, economic and environmental realities according to its own aims and achieve a true

transformation based on social justice.

[1] <https://grain.org/es/article/6438-nuevas-investigaciones-sugieren-que-las-granjas-industriales-y-no-los-mercados-de-productos-frescos-podrian-ser-el-origen-del-covid-19>

[2] <https://www.grain.org/es/article/6429-pesteporcina-africana-un-futuro-cultivado-en-granjas-industriales-una-pandemia-a-la-vez>

[3] OECD-FAO Agricultural Outlook 2017-2026, 2017

[4] Ibid.

[5] "The state of food security and nutrition in the world, 2018," FAO, IFAD, UNICEF, WFP AND WHO, 2018.  
<http://www.fao.org/3/i9553en/i9553en.pdf>

[6] "Ultra-processed foods" refers to industrially-prepared foods that are mass-produced for human consumption. They contain much higher than the recommended quantities of sugar, salt and fats, they stimulate the appetite artificially and generate addiction and their consumption is linked to illnesses such as diabetes and different types of cancer.

[7] "Yields and Land Use in Agriculture," Hannah Roser and Max Ritchie, Our World In Data, Oxford Martin Programme on Global Development, 2019.  
<https://ourworldindata.org/yields-and-land-use-in-agriculture>

[8] Heinrich Böll Foundation. Meat atlas: Global facts and figures about meat, 2014.  
[https://www.boell.de/sites/default/files/atlasdela-carne2014\\_web\\_140717.pdf](https://www.boell.de/sites/default/files/atlasdela-carne2014_web_140717.pdf). For more information about perverse subsidies, see <https://globalforestcoalition.org/perverse-incentives-deforestation-for-livestock/>

[9] Fonterra: 42.5 million tons (mt). Dairy Farmers of America 52.2 mt. Cargill: 86.3 mt. Tyson Foods: 118.1 mt. JBS: 280.2 mt. TOTAL: 578.3 mt.

[10] [https://www.who.int/antimicrobial-resistance/interagency-coordination-group/IACG\\_final\\_report\\_ES.pdf?ua=1](https://www.who.int/antimicrobial-resistance/interagency-coordination-group/IACG_final_report_ES.pdf?ua=1)

[11] <https://www.oecd.org/health/health-systems/AMR-Policy-Insights-November2016.pdf>

[12] <https://www.pnas.org/content/112/18/5649.full>

[13] <https://www.grain.org/es/article/6356-el-acuerdo-comercial-union-europea-mercosur-intensificara-la-crisis-climatica-provocada-por-la-agricultura>

[14] <https://pastres.org/2020/03/27/living-with-coronavirus-uncertainties-four-lessons-from-pastoralists/>

[15] [https://www.brightergreen.org/files/ethiopia\\_brief\\_bg\\_3.pdf](https://www.brightergreen.org/files/ethiopia_brief_bg_3.pdf)

[16] <https://www.un.org/sustainabledevelopment/es/hunger/>

[17] Massachusetts Institute of Technology Observatory of Economic Complexity, available at: <https://atlas.media.mit.edu/es/profile/country/pry/>

[18] <https://globalforestcoalition.org/perverse-incentives-deforestation-for-livestock/>

[19] <https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/>

[20] The presentations can be accessed via <https://drive.google.com/drive/folders/1sgmQH4IIIqd5POHncexaVQeUrgG-hxa0>

[21] <https://apwld.org/press-release-peoples-movements-reject-the-regional-comprehensive-economic-partnership-rcep/>

[22] <https://grain.org/es/article/6159-la-iniciativa-de-la-franja-y-la-ruta-las-empresas-chinas-de-agronegocios-se-globalizan>

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