



# 1. Welcome Letter

Esteemed participants of the IsarMUN x UN75  
United Nations Framework Convention on Climate Change,

Besides the pandemic, this year proved the world is also in crisis in many other ways. The arctic ice caps are at an all time low, dramatic forest fires have ravaged hundreds of square miles of surface, and drastic drops in biodiversity have been reported by scientists worldwide. These are just a set of examples through which global warming shows its devastating consequences. Hence, the UNFCCC, as the primary political body to decide upon the international effort to tackle these challenges, is as relevant as ever and we feel privileged to be able to hold an online discussion guided by its purpose.

In this year's edition of IsarMUN, celebrating the United Nations 75th birthday by learning from past mistakes and successes, participants are set to discuss controversial topics and come up with decisions that will define the future of our planet. The contribution of the meat industry to global warming through emission undoubtedly fits this assignment. While at first it appears to be a very technical issue, to be solved and discussed by scientists, a more comprehensive analysis reveals a range of social and economic issues interfering as well as a variety of possible pathways ahead to choose from depending on political priorities. Consequently, we are hoping to experience a rich and diverse interaction on this specific challenge and even more so an agreement that provides an effective solution acceptable to all of us.

It is our utmost pleasure to present to you this Background Paper. It aims to outline the topic as well as its boundaries. Moreover, it serves as a guide to your own research and preparation and hopefully inspires you to think of creative solutions and strong arguments in your favor. A better preparation directly equates to more intense and fruitful debates and potentially a better outcome. In case of any questions, do not hesitate to contact us (see contact information below) about any substantial matters or regarding the RoPs. For all questions regarding participation and registration, please contact the IsarMUN secretariat via [secretariat@isarmun.org](mailto:secretariat@isarmun.org).

We are both looking forward to meeting you (virtually) and we are excited to learn from your perspectives and ideas.

Kind regards,

Your UNFCCC chairpersons Maurice and Žan

## 2. Introduction

It is now scientific consensus that climate change can at least partially be linked to greenhouse gases emitted through human activity. Within this field of research, the role of emissions of the meat industry for climate change has been under scientific scrutiny for several decades. A roundtable during the 25th Conference of Parties to the UNFCCC stated that the agri-food system accounts for at least 30% of greenhouse gas emissions (Agri-food chains Roundtable, 2019: 2).

While the exact numbers vary between studies, information about the emissions produced by the meat industry as a whole and in its different branches and production line stages is now abundant. Yet, the political conclusions drawn from this knowledge are still unclear as different solutions and alternatives have been discovered and proposed. As a consequence, we would like to focus the debate less on the specific contribution to climate change, but rather the political priorities as well as possible options to reduce this contribution.

As the name indicates, the UNFCCC is a convention. It is administered and implementation is monitored by the UNFCCC secretariat. An impressive number of committees and subsidiary bodies operate on a technical level to discuss and evaluate implementation in those countries that are a party to the convention. They also give specific recommendations and suggest solutions. The main political organ however is the Conference of Parties (COP), the annual meeting of parties, often also termed the “UN Climate Change Conference” (UNFCCC, 2020a). During this conference, ratifying governments debate on the progress made towards reaching goals set at previous conferences and the political priorities in dealing with existing and new challenges to the global climate balance. Most famously, the outcome document of the COP 21 in 2015, the Paris Agreement gathered all governments behind the goal of limiting average temperature rise to 1.5° compared to pre-industrial levels (UNFCCC, 2020b).

Although IsarMUN 2020 will not be simulating country representations, we aim to conduct a debate on the level of the COP rather than the technical subsidiary bodies. Yet, a certain level of technical and detailed knowledge is still required for our debate, and this Background Paper aims to help you start your research in this direction in order to enable you to coherently and strongly support your opinion with arguments and facts.

Thus, in this Background Paper, we first analyze the nexus of social, economic and environmental issues around the meat industry and its contribution to climate change and then outline a non-conclusive list of options to lower emissions as well as alternatives to meat production.

## 3. Development of an issue to the current stasis

When trying to understand the current stasis of the meat industry and its effect on climate change, we must analyze certain aspects that are interconnected. We will try to analyze the point of view

of an average consumer, the motives of the meat industry, the direct impact on the environment, the impact on health and the reasons behind veganism/vegetarianism.

### **3.1 The Average Consumer**

Meat is without a doubt one of the most common elements of an average meal around the world. In the past, meat used to be a symbol of luxury. Most families could afford it only a few times per week. Nowadays, the situation is a bit different. Steaks, Austrian Wiener schnitzels, German bratwursts, sausages, ham and bacon can easily be enjoyed during lunch. We can use Mortadella, Prosciutto or Jamón in sandwiches as a snack (Tasteatlas, 2020). Moreover, we can hardly imagine breakfast and numerous recipes without eggs or milk, other products of animal origin. Meat is consumed all over the world.

The most common types of meat are beef, veal, pork, poultry and sheep meat. Consumption is measured in thousands of tonnes (OECD, 2020). In some countries, some types of meat are not consumed due to religious beliefs, while some countries prefer specific types of meat due to the preferable natural environment. It is however obvious that the consumption of meat is increasing.

### **3.2 The Meat industry**

In the past, the demand was sufficiently met by small farmers with limited animals. With industrial revolution and globalization, demand was not only local but also global. Only few farmers could keep up with exponential growth of meat consumption. The meat industry became incorporated, there were less farmers in total, but each farmer had far more animals. Some big companies emerged. The largest companies in this industry were mainly concentrated in Brazil, the US and Europe, for example Tyson Foods, JBS, Cargill, Vion etc (Heinrich Böll Stiftung, 2014).

At the beginning of the development, the most ethically questionable process of the meat industry was slaughter of the animals. In Chicago, slaughterhouses and its moving production lines were so efficient that they served inspiration for Henry Ford's production lines in the car industry. Slaughterhouses were seen as a more hygienic alternative to old-fashioned methods. This process is, however, taken over by larger companies. In 1967, there were almost 10000 slaughterhouses in the US while in 2010, there were only less than 3000. In 2014, 88% of all animals were slaughtered by just 10 companies. In 2014, the number of animals slaughtered was absurd: 42 million chickens, 170 thousand cattle and 350 thousand pigs per week (Heinrich Böll Stiftung, 2014).

Moreover, even animals are becoming "standardized". Thanks to globalization and the animal genetic industry, only the finest breeds and thus the best meat is used in the meat industry. In the US, Holstein cows are most commonly used for dairy products (82% of all cows used for dairy products belong to that breed). Meat from Angus, Hereford and Simmental represent 60% of the

entire beef meat production. Three varieties of pigs represent 75% of the entire pork market in the US (Heinrich Böll Stiftung, 2014).

Selective breeding is not the only consequence of the animal genetic industry. We receive more meat from each animal while the actual living standard of animals in a standardized farm is abnormally despicable. It is common that chickens do not even see the daylight in their entire life and live in a space smaller than an A4 piece of paper. On average, they live for only 42 days (World Animal Protection, 2016). The awareness of the inhumane ways of the meat industry was spread with documentaries such as Land of Hope and Glory, Food Inc., Cowspiracy, Dominion, Earthlings (IMDb, 2013). It is worth mentioning that there is still a presence of smaller farms that treat animals in a more “humane” way. Yet one must realize that in a survey, conducted in 2016, only 29% out of 12000 people asked about the origin of the chicken they have just bought (World Animal Protection, 2016).

### **3.3 The Environment**

The meat industry has an enormous effect on the environment. One of the biggest issues is without a doubt its water supply. Agriculture is the main user of water supply, as 70% of all freshwater is spent on agriculture. It is mainly used to grow non-animal products for humans as well as fodder for animals. It takes approximately 15500 liters of water for just 1 kilogram of beef. One cow needs around 1300 kilograms of grain, 7200 kilograms of forage in her lifetime. An average cow drinks 24000 liters of freshwater in a lifetime and 7000 liters is used for stall cleaning. On average we get 200 kilograms of meat and thus the numbers can match (Heinrich Böll Stiftung, 2014). If we mention that, according to WHO, 1 out of 3 people has no guaranteed access to safe drinking water, this is not only an environmental, but also a humanitarian concern (World Health Organization, 2019).

Moreover, a lot of space is needed to provide the supply of meat. In 2014, 14 billion hectares were used as cultivated land. Nearly one third of that land is meant to produce fodder for animals. To put it into a different perspective: 800 million tonnes or 40% of annual production of wheat, rye, oats and maize are used for animals. We have to add roughly 250 million tonnes of oilseeds, especially soybeans (Heinrich Böll Stiftung, 2014).

With the demand for constantly increasing, it is obvious that more cultivating space is needed. This issue is seen especially in Brazil, home to the Amazon forest. This South American country had 201 million people and 211,3 million cattle in 2014. 172 million hectares of land is used as an area for animals. While deforestation, which is especially caused by the Amazon forest fire, is the dire issue of the recent years, it is worth mentioning that 62,2% of deforested land was used as a pasture for cattle. The Amazon is now home to 40 million cattle, which is a 518% increase compared to 1975 (Heinrich Böll Stiftung, 2014).

The Amazon forest spans 670 million hectares and stores from 90 to 140 billion metric tons of carbon. From 2001 to 2012, more than 17 million hectares of Amazon was lost and projections estimate that additional 48 million hectares would be lost from 2010 to 2030 if the trends continue. This would mean that more than a quarter of Amazon biome would be without trees (World Wide Fund For Nature, n.d.). Deforestation, thus, leads to smaller storage of carbon, which directly affects climate change.

Meat industry is however also directly responsible for emission of greenhouse gases. 6% of all greenhouse gases are directly allocated to livestock while around 32% are connected to activities that are directly linked to the meat industry (production of feed, fertilizer etc.) (Heinrich Böll Stiftung, 2014). Feeding and fermentation make up the large majority of these emissions, while manure handling and meat processing contribute the remainder (Gerber et al., 2013: 14).

Upon a closer look, different types of meat cause different amounts as well as different greenhouse gas emissions. While cows are usually a buzzword when talking about CO<sub>2</sub> emissions (27 kilograms of CO<sub>2</sub> per one kilogram of meat), it is worth mentioning that 39,2 kilograms of CO<sub>2</sub> is related to the production of 1 kilogram of lamb meat (Heinrich Böll Stiftung, 2014). However, cattle farming also emits lots of methane and nitrous oxide, both highly potent greenhouse gases (Fountain, 2020) and is generally responsible for most emissions (Gerber et al., 2013: 15-17). Carbon dioxide also plays a significant part through energy consumption, heating, the use of vehicles and generators and is further indirectly released into the atmosphere by breaking up soil and vegetation that serve as carbon sinks.

On a side note, climate change is not only perceived as a destructive consequence of industrial meat production, but also a potential risk to the industry. The investment group FAIRR projects that 16 to 62 percent of global meat market value will be lost to alternative proteins. Moreover, they identify higher costs for electricity due to increasingly rigid carbon pricing, for feeding due to lower crop yields, and for livestock due to higher mortality rates as key risks directly linked to climate change (UNFCCC, 2020c).<sup>1</sup>

### **3.4 Human Health**

The modern day meat industry needs to assure that animals remain healthy, or put in more appropriate words: that it does not get a disease that could infect an entire cattle. While antibiotics are an efficient way to combat bacterial diseases, one must realize that bacteria, dangerous for both animals and humans, are becoming resistant to these antibiotics. Health concerns were also seen in 2009 during a swine flu pandemic. The fear of a deadly swine flu was also present in 2019 during a smaller outbreak in Poland, which resulted in the death of 21 wild boars and several trade restrictions concerning polish pork meat (Business Insider, 2019). E-coli is yet another disease that

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<sup>1</sup> Although adaptation strategies for the meat industry are not considered to be part of the specific challenge this committee would like to address.

can be potentially dangerous to humans and can be linked to animals. According to Richard Raymond (former undersecretary for the US Department of Agriculture): “*Whenever you have an E coli outbreak in any produce, and you do a long enough investigation, eventually you will bump into a cow.* (Carr, 2020)” While the cause of the current COVID-19 pandemic cannot be directly associated with the meat industry, a popular rumor is that it was transmitted to humans after a human digested a bat.

A balanced diet is generally considered to be most ideal for human digestion and long-term health. Meat can even serve as a basis for some diets, especially the ketogenic diet, which is based on fats of both animal and non-animal origin. The focus of this diet is to reduce carbs. The immediate side effect of this diet can however be so-called “keto-flu”, with symptoms such as diarrhea, constipation or vomiting, which is a result of the body that is adjusting to the new diet (Mawer, n.d.).

Eating too much meat on a daily basis can however have an adverse effect. The body needs a lot of energy to digest protein and fat and thus one may feel tired after a meal. Without drinking additional water or eating fiber, one may face digestion issues. Eating meat with a high percentage of unnecessary fat may lead to diseases like cancer or cardiovascular illness. While we cannot fully connect some illnesses to the consumption of meat, it is important to notice that the meat industry itself is lobbying actively for the non-recognition of respective studies by policymakers (Landsverk, 2020).

### **3.5 Animal Rights and Dietary Movements**

On one hand, we have lobbyists for meat industry, on another we have activists that fight against animal cruelty. The most known organization is a nonprofit organization named PETA (People for Ethical Treatment of Animals). They fight against animal cruelty in areas such as the meat or fashion industry and combat animal torture in general (cockfights, bullfights). They however had some scandals over the past 40 years that had left a stain in the battle against animal cruelty. They for example believe that people should not have pets, made some sexist or false advertisements as well as a controversial statement at the passing of zoologist Steve Irwin. They also allegedly euthanize animals, yet this is a claim that can once more be linked to meat industry lobbyists (Green Eco-Friend, 2020).

PETA is however not the only voice of the protests against the meat industry. Many are protesting by changing their lifestyle and their eating habits. It is hard to present statistics, yet a survey (based on 28 countries) claims that omnivores (consumption of both animal and non-animal products) are still the dominant group (73%), flexitarian (occasional consumption of meat and fish) are following with 14% of the entire sample. 5% of the sample is vegetarian (no consumption of meat, consumption of other animal products (eggs, cheese, milk) is still regular). 3% of people identify as vegan (no consumption of products related to animals). There are approximately 3% of

pescatarians (consumption of fish, but no consumption of other meat) in the sample. It is worth mentioning that the numbers may not reflect the eating habits of a population, since only 28 countries were taken into account, whereas eating habits differ around the world. It is however worth mentioning that despite the grave issue of food waste, lowering the demand is one of the methods of limiting the meat industry (Williams, 2020).

Another way of limiting the powers of this industry is through politics. Climate change is already one of the most discussed topics in the world of politics and diplomacy. The Paris Agreement is one of the most important agreements of the last decade. There are many other desires for regulation on a national level, such as the Green New Deal in the United States. While there is no direct emphasis on the meat industry, one must realize that the preservation of this planet is becoming a priority for many. While some may argue that younger generations are inactive in politics, one must mention “Fridays for Future”. There were numerous protests each Friday in order to fight against climate change. While the outburst of the COVID-19 pandemic postponed such form of combat, one must acknowledge the role of the youth in the fight.

## 4. Potential solutions

There are generally three possible pathways to cope with emissions in the meat industry:

1. Largely focus on other GHG emitters, such as transportation or heating, and leave the meat industry operating as it is.
2. Reform meat production, trade, and commerce to reduce emissions.
3. Reduce meat consumption by focusing on low-emission alternatives and inducing a change in humanity’s diet.

These pathways are motivated by different priorities and their effectiveness is debatable. The first pathway suggests that other industries contribute more to global emissions and/or are easier to reform or cut. The second pathway still regards meat production as necessary for a balanced diet and/or economic growth, but aims to reduce its emissions by altering production patterns and market dynamics. The third pathway rejects the possibility and/or effectiveness of reforming the meat sector to reduce its climate impact in the long term (although not rejecting short-term reforms) and instead focuses on establishing low-emission alternatives that take over the meat market as part of an alternative diet.

### 4.1. Reducing emissions

When considering a reform to the industry, there are uncountable numbers of suggestions and already conducted experiments. Hence, this guide is only able to present some of the most prominent ones.



One way to reduce emissions is by enforcing or encouraging changes to the production of animal products. This primarily concerns buildings, transport, operations, and feeding. More efficient insulation and machinery reduces heating and fuel energy demand. Additionally, scientists already experiment with dietary supplement in cattle farming, being the most harmful in terms of methane emissions, in order to reduce the methane produced during fermentation in the cow's stomachs or with improved manure storage (Fountain, 2020). Carbon dioxide capture mechanisms are another way to limit emissions, but are relatively new and complex (IPCC, 2005: 108). These solutions of course raises the cost of cattle farming and thus has to be accompanied by subsidies to make it financially attractive to farmers.

Interestingly, the rising efficiency of meat production through faster weight gain - a dynamic of mass animal farming that is often criticized - actually lowers emissions per kilogram of beef as the cows emit methane for a shorter period of time. In fact, the perfect cow from the perspective of the industrial beef producer is one that doesn't emit carbon, but transforms it into meat (ibid.).

One additional factor for efficiency and thus emissions is food waste. It is estimated at a "30% global average that carries a price tag of \$940 billion per year in economic losses. If emissions from food loss and waste were added up, as a country, it would be the third largest emitter after US and China" (Agri-food chains Roundtable, 2019: 3). Lowering food waste by improving storage and transportation as well as distribution can thus be an effective way to reduce unnecessary emissions.

Another option is to make trade and commerce of meat products more environmentally sustainable. This is also heavily linked to consumption patterns and thus not only comprises ideas to limit or change international trade on meat products, but also to change people's diets and preferences towards more locally produced food, seasonal foods, or most importantly, a less meat intensive diet.

## **4.2 Alternatives**

The latter aspect is closely linked to a range of alternatives to meat production. On the consumer side, the vegetarian and vegan movement - among others - proposes a meat-free diet. Vegan or vegetarian diets can be accompanied by a range of alternative sources of protein, such as nuts, beans, peas, soy, potatoes, and algae, among many others (Villines, 2018). Some of these alternatives have been criticized for not actually reducing emissions, but even harming the environment, such as in the case of rising soy production, for which rainforests are cut and monocultures placed instead (World Wide Fund for Nature, 2016).

However, there are a range of non-vegetarian alternatives to industrial meat production, most famously the farming of insects. This is by far not new to some societies and thus could be a viable low-emission alternative protein source for currently meat-intensive diets. It also requires less space and water and is considered more cost-effective in industrial scales (D'Costa, 2013).

Additionally, mixed cultures exploit symbioses between animal and vegetable growth while reducing emissions and producing valuable proteins anyway. One example is aquaponics, “the process of growing aquatic organisms and plants symbiotically, in which the effluent of aquaculture undergoes microbial transformations to be used as a source of nutrients for plant growth, while nutrient absorption from plants remediates water for aquaculture” (Yep and Zheng, 2019: 1587).

### 4.3 Regulatory Measures

Each of these changes can be accompanied by regulatory measures. Some scholars advocate for a tax on carbon dioxide emissions (Marron et al., 2015). The European Union has implemented an emission trading scheme to put a price tag on emissions (European Commission, 2020). Subsidies and tax deductions for low-emission production techniques or structural funds for eco-friendly food production are some of the financial leverages governments can use to lower emissions.

On the consumer side, international labels for organically produced food as well as nutriscores and other certifications give customers transparency and thus enable them to choose the healthier and more eco-friendly products.

## 5. Critical questions for the discussion

- Should policymakers prioritize the reduction of emissions in the meat industry? Why?
- Which are options that have proven to be a success in reducing emissions in the meat industry?
- Can we preserve the current level of productivity and meat consumption and still lower the industry’s emissions?
- Which of the existing or proposed solutions to reduce emissions should be prioritized?
- Which obstacles do countries face in implementing these solutions?
- What is the role of the UNFCCC in pushing towards these solutions? What are its competences according to international law?

## 6. Sources for further research

### 6.1 Relevant UN agencies and bodies:

- UNFCCC: <https://unfccc.int>
- International Panel on Climate Change: <https://www.ipcc.ch>
- Food and Agricultural Organization: <http://www.fao.org/home/en/>
- World Food Programme: <https://www.wfp.org>
- United Nations Environment Programme: <https://www.unep.org>

### 6.2 Documentaries:

- Land of Hope and Glory: <https://www.imdb.com/title/tt7214598/>  
<https://www.landofhopeandglory.org> (Website)
- Food Inc.: <https://www.imdb.com/title/tt1286537/>  
[https://www.youtube.com/watch?v=eHJiNC\\_7wuw](https://www.youtube.com/watch?v=eHJiNC_7wuw) (Trailer)
- Cowspiracy: <https://www.imdb.com/title/tt3302820/>  
<https://www.youtube.com/watch?v=nV04zyfLyN4> (Trailer)
- Dominion: <https://www.imdb.com/title/tt5773402/>  
<https://www.youtube.com/watch?v=LQRAfJyEsko> (Full)
- Earthlings: <https://www.imdb.com/title/tt0358456/>

### 6.3 Selected literature:

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Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Faluccci, A. & Tempio, G. 2013. *Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities*. Food and Agriculture Organization of the United Nations (FAO). Available at <http://www.fao.org/3/i3437e/i3437e.pdf>

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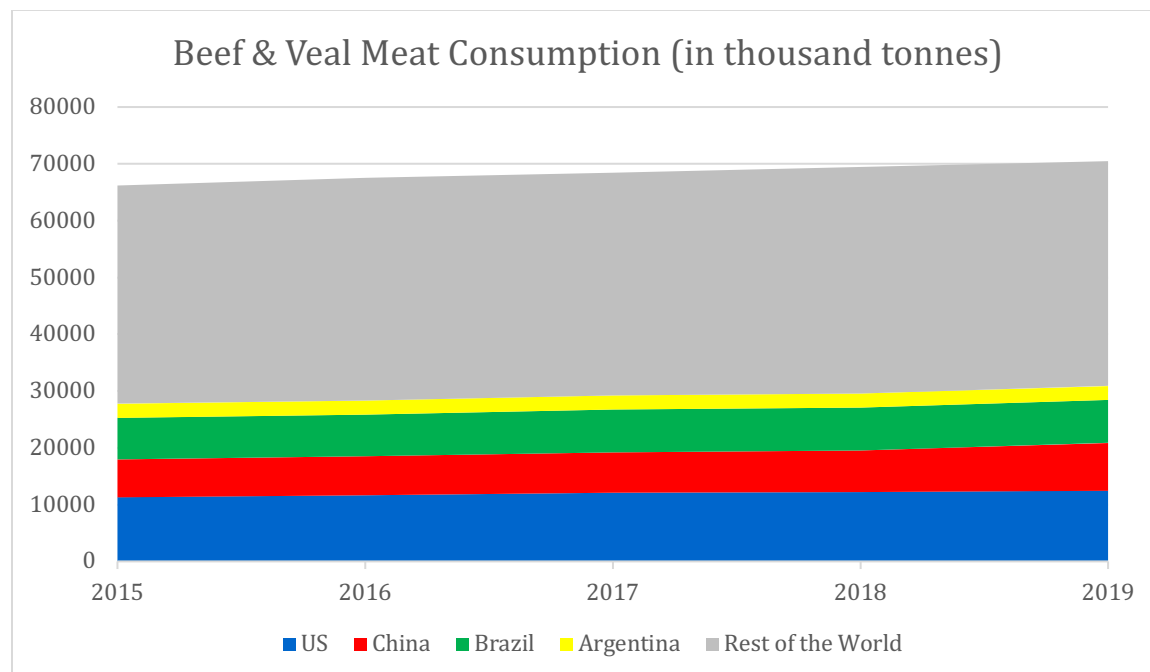
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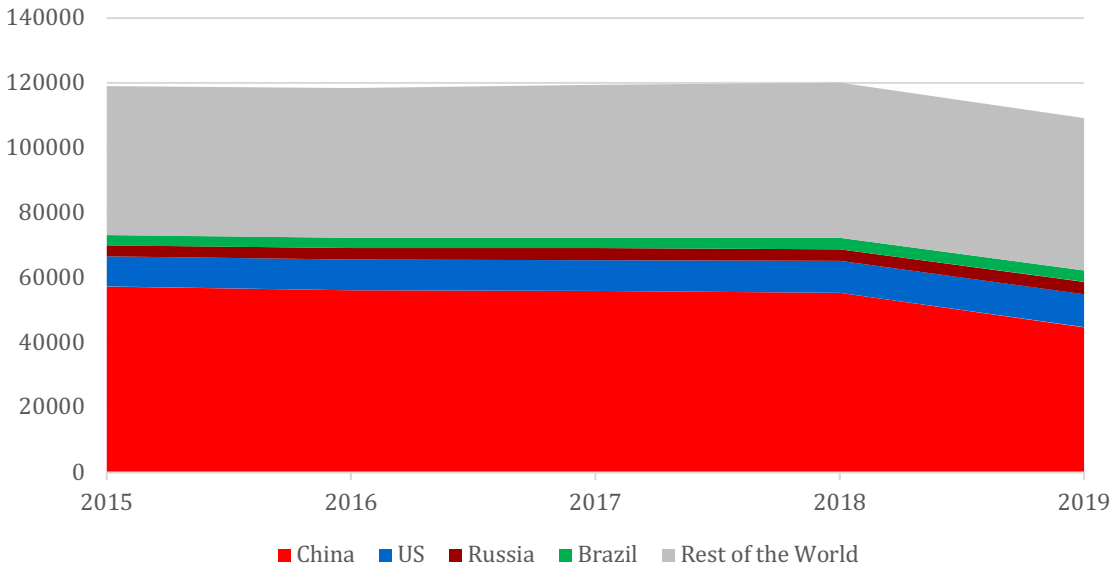
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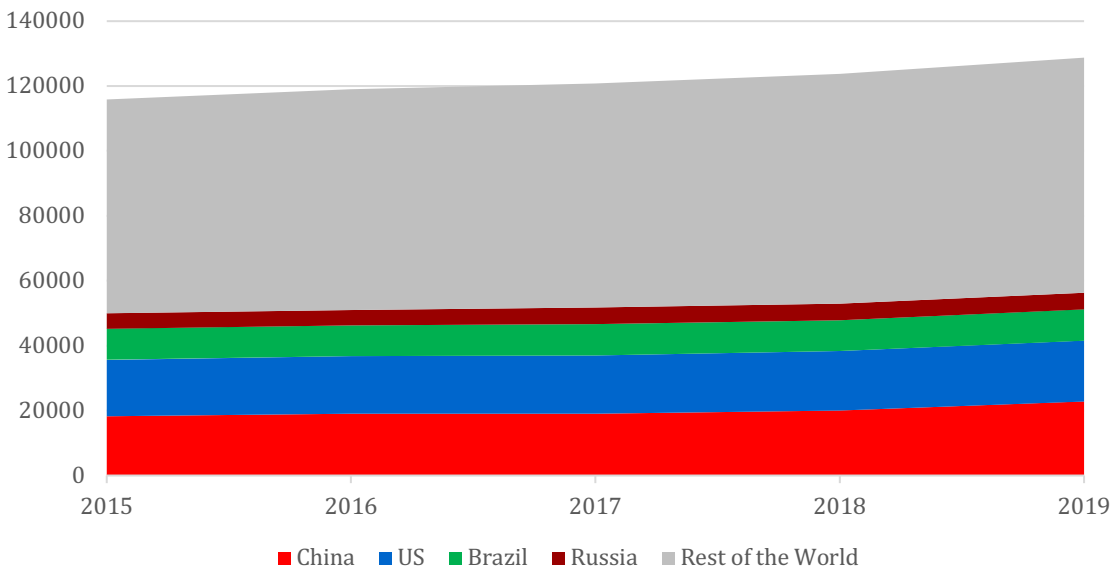
## 8. Appendix



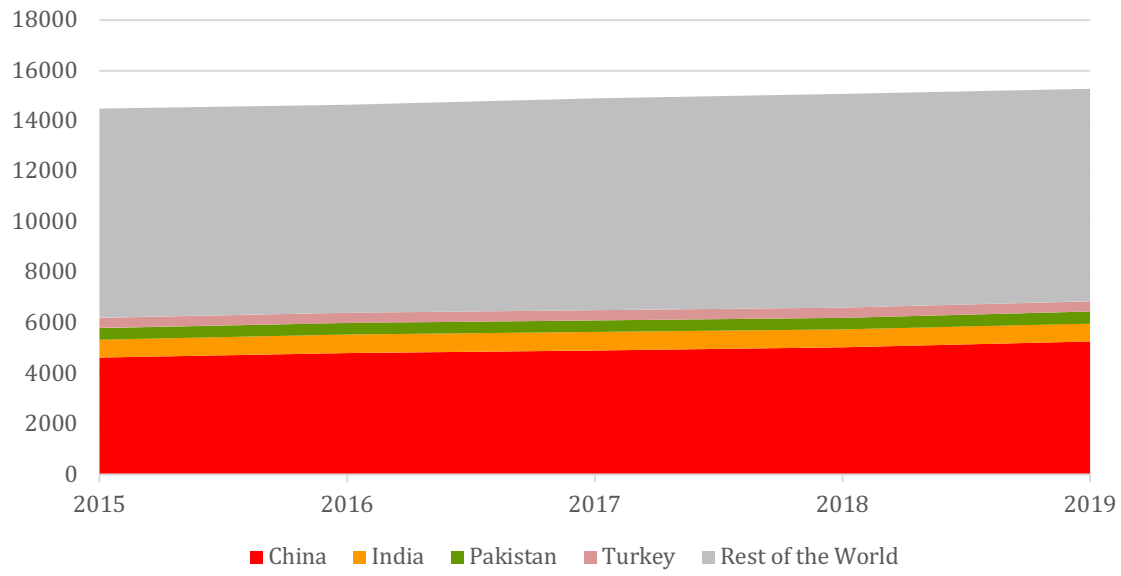
### Pork Meat Consumption (in thousand tonnes)



### Poultry Meat Consumption (in thousand tonnes)

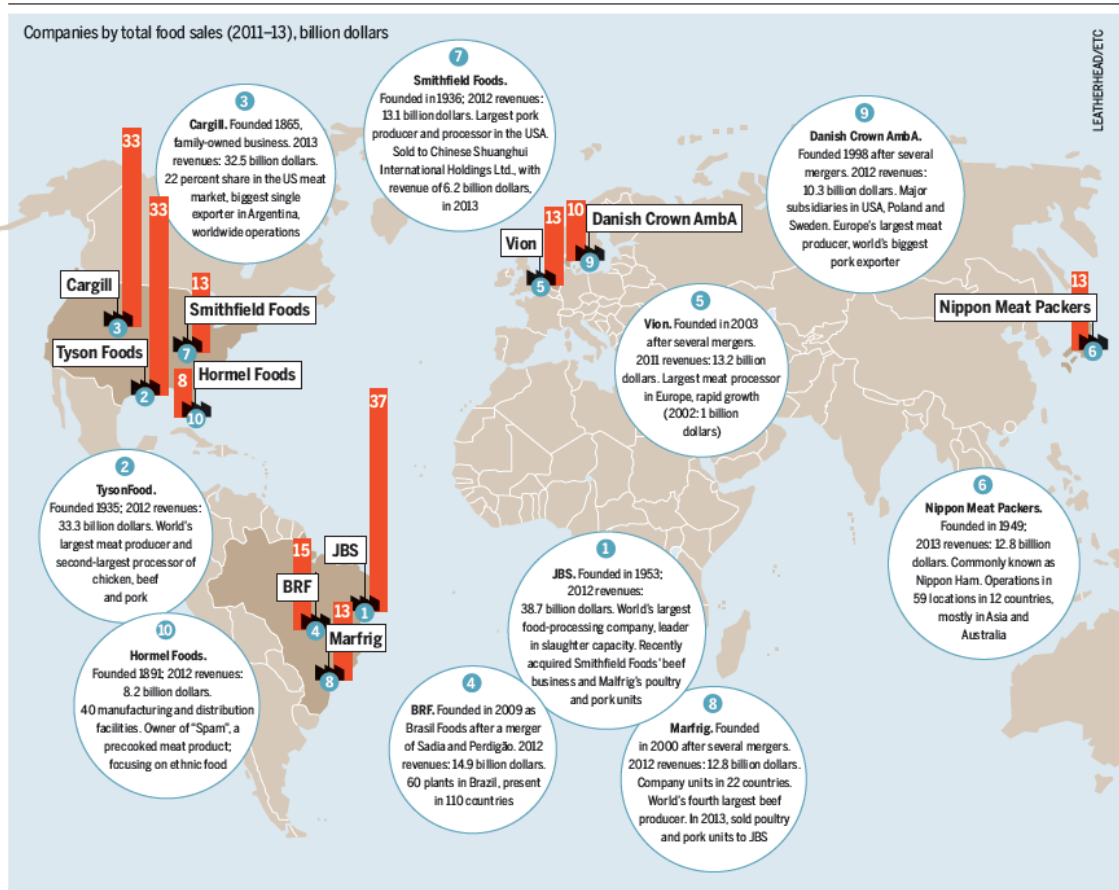


Sheep Meat Consumption (in thousand tonnes)



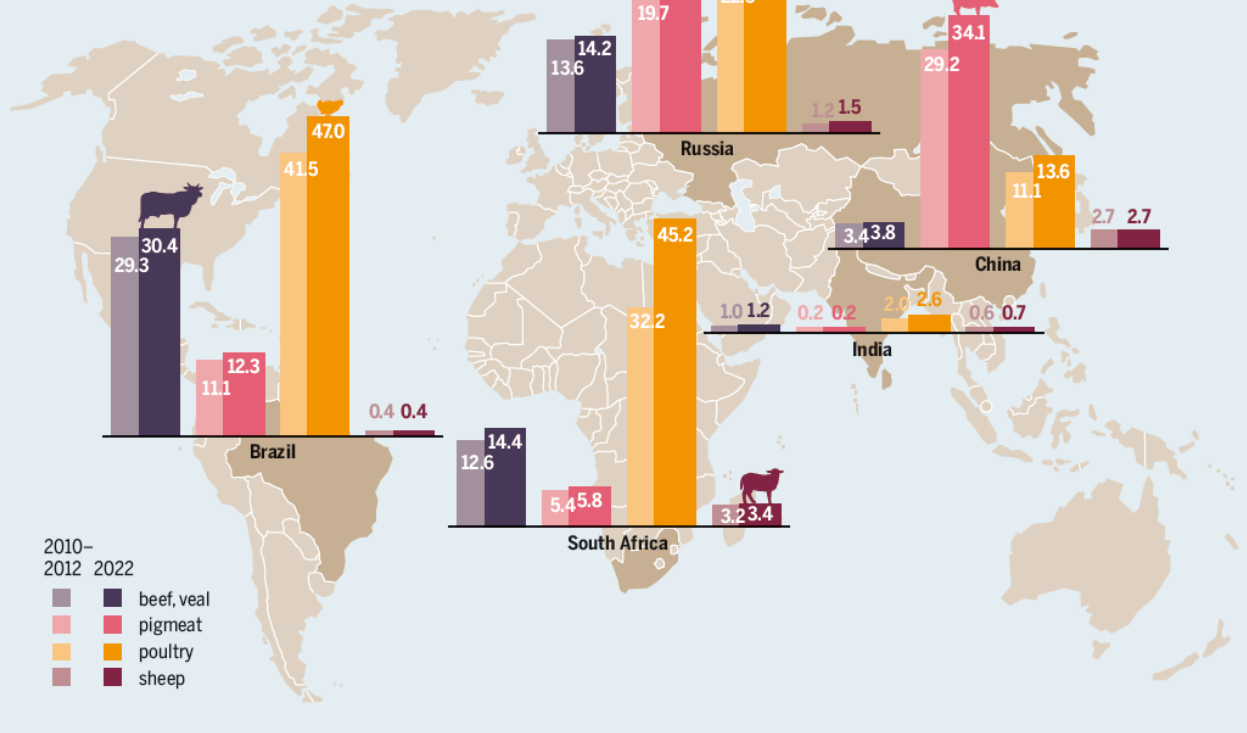


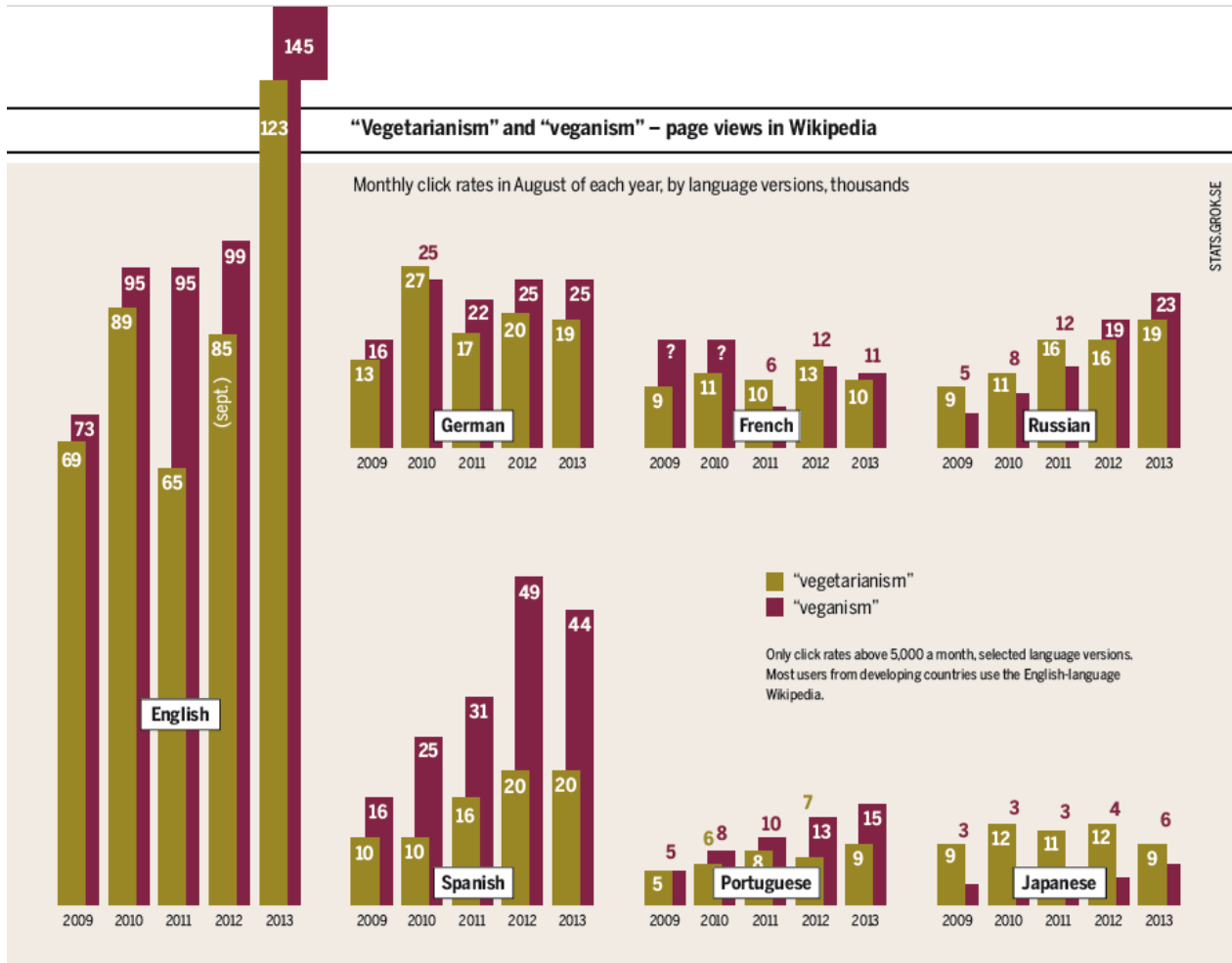
## The Top Ten of the international meat industry



Meat consumption per capita, kilograms, average 2010–12 (estimate), and 2022 (forecast), in the BRICS countries (Brazil, Russia, India, China and South Africa)

OECD/FAO





## Emissions due to animal products consumed in the USA

