



CONQUERING COMPLEXITY AS
AN INTERNATIONAL AGENT

ACHIEVING GLOBAL SUSTAINABLE LAND USE AND SOCIO-ECONOMIC GROWTH

THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

1. Welcome Letter

Distinguished Delegates,

Welcome to the United Nations Framework Convention on Climate Change (UNFCCC) at GrunnMUN 2020. We are delighted to announce that, in this year's conference, the topic addressed will be the sustainable use of lands globally, alongside socio-economic growth.

The United Nations Framework Convention on Climate Change entered into force in 1994, its main aim being to prevent dangerous human interference with the climate system.¹ The consequences of climate change can already be observed today and have alarmed the international community to become active and work together. Climate change knows no borders, hence the success of the UNFCCC's goals depends heavily on the cooperation of its member states. This year, during GrunnMUN 2020, you will have the opportunity to put yourself in the position of a state representative for a day and try to find concrete solutions to this challenge.

Your day at GrunnMUN 2020 will consist of long discussions and negotiations in which you will try to come to an agreement with the other Parties to the Convention and pass a resolution. You will notice that it will not be easy to find a compromise, as all countries have various interests and pursue different goals. You have to put yourself in the position of other states but at the same time not lose sight of your own objectives. GrunnMUN 2020 will offer you the perfect opportunity to expand your knowledge in this field, grasp its complexity, and to consider multiple concrete solutions. To be best prepared, we recommend that you read this background paper carefully, as it contains important information on the topic. In addition, we strongly encourage you to find out your country's position on this issue before the start of the conference. Finally, it is important to read the Rules of Procedure carefully to ensure a fruitful and productive debate.

We hope that you are as excited about GrunnMUN 2020 as we are. We are very much looking forward to meeting you all; we are certain that it will be a great experience for everyone!

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¹ "What is the United Nations Framework Convention on Climate Change?," UNFCCC, accessed December 30, 2019, <https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change>.

2. Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) is one of three conventions that have been adopted in 1992 at the Rio Earth Summit. Next to the UNFCCC there are the UN Convention on Biological Diversity and the Convention to Combat Desertification and together these three conventions are often described as the ‘Rio Conventions’.²

The main objective of the UNFCCC is the ‘stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner’.³ The Parties to the Convention have recognized the immense importance of terrestrial and marine ecosystems to achieve the goals of the UNFCCC, which will be the main topic of debate during GrunnMUN 2020.

Knowledge on soil, water, biodiversity and environmental management is necessary in order to address conflicting claims to natural resources, while maintaining social and economic security and preserving the environment. Sustainable land use ensures a fair distribution of environmental assets in a fashion that secures the current and future human needs. Today, most land is used for agriculture, namely 50% of the world's habitable land area in 2019.⁴ Sustainable land use is not only important for countries like Brazil, which deforest large areas of rainforest for agricultural use, but it is, in fact, a topic that is relevant on a global scale. The importance can be observed in monocultures in the USA, the avocado production in Argentina, the quinoa production in Bolivia, rice production in China, the use of pesticides on a global scale, and in the European Union with the associated extinction of many insects. Moreover, meat production must be taken into account, as almost 80% of the agricultural land is used for livestock: meat and dairy (including the production of animal feed).⁵

The question the UNFCCC has to answer is how sustainable use of our lands can be achieved globally without compromising the need for socio-economic growth.

² UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

³ United Nations 1992, “United Nations Framework Convention on Climate Change”, <https://unfccc.int/resource/docs/convkp/conveng.pdf>.

⁴ “Half of the World’s Habitable Land is Used for Agriculture,” Our World in Data, accessed December 1, 2019, <https://ourworldindata.org/global-land-for-agriculture>.

⁵ “Agriculture at a Crossroads: Findings and Recommendations for Future Farming,” Global Agriculture, accessed December 1, 2019, <https://www.globalagriculture.org/report-topics/meat-and-animal-feed.html>.

3. Problem specification

According to the UNFCCC, ‘climate change’ is defined as ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods’.⁶ The aim of the UNFCCC is, therefore, to stabilise greenhouse gas concentrations at a level which would prevent dangerous human interference with the climate system.⁷ An important factor in reducing greenhouse gas emissions is sustainable land use, and here special attention must be paid to the effects of agriculture on our climate. Today, most land is used for agriculture, namely 50% of the world's habitable land area in 2019.⁸ This underlines the importance of land areas for our climate and makes it necessary for the international community to address this issue.

Sustainable Land Management is defined by the United Nations as ‘the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions’.⁹ In the face of climate change, Parties to the Convention must adopt a ‘holistic approach’ to preserve the ecosystems by integrating social, economic, physical and biological factors in order to ensure a sustainable use of land and a sustainable development.¹⁰ The UNFCCC seeks to promote sustainable management of these natural resources and put a great focus on the sustainable use of terrestrial and marine ecosystems.¹¹

The United Nations recognise that Parties to the Convention are still at different stages of economic development and therefore their financial resources to address this issue vary. Furthermore, it is noted that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries.¹² Hence, industrialized countries are expected to take a leading position in reducing emissions and to support countries in economic development in their climate protection activities through financial assistance.¹³ Here it is

⁶ United Nations 1992, “United Nations Framework Convention on Climate Change”, <https://unfccc.int/resource/docs/convkp/conveng.pdf>.

⁷ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

⁸ “Half of the World’s Habitable Land is Used for Agriculture,” Our World in Data, accessed December 1, 2019, <https://ourworldindata.org/global-land-for-agriculture>.

⁹ “Sustainable Land Management,” Food and Agriculture Organization of the United Nations, accessed December 30, 2019, <http://www.fao.org/land-water/land/sustainable-land-management/en/>.

¹⁰ Food and Agriculture Organization of the United Nations, “Sustainable Land Management.”

¹¹ United Nations 1992, “United Nations Framework Convention on Climate Change.”

¹² UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

¹³ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

important to carefully examine the particular tasks of Annex I, Annex II and Non-Annex I Parties specified in the Convention (see section 3: QARMA n.1). The UNFCCC also recognises the need for economic development, with particular emphasis on the importance for developing countries.¹⁴ How can a sustainable use of our lands be achieved globally without compromising the need for socio-economic growth?

This is a highly complex issue, as every country is affected by the consequences of climate change in different ways. During GrunnMUN 2020, you will have the chance to represent one of these countries and work out solutions together with other representatives according to this year's theme: "Conquering Complexity as an International Agent".

¹⁴ UNFCCC, "What is the United Nations Framework Convention on Climate Change?"

4. Questions A Resolution Must Answer (QARMAs)

We hope that we will give you some interesting new facts and suggestions in the QARMA sections for the debate at GrunnMUN 2020's UNFCCC. Please note that these are questions that the resolution is intended to answer, hence you must investigate how your country stands on these questions. If you have further ideas on our Council topic that you would like to discuss, please do not hesitate to address them in the debates as well. Our international community must bring together as many ideas as possible to achieve sustainable land use and socio-economic growth worldwide.

1. Is the classification into the three different groups of Annex I, Annex II and Non-Annex I Parties still appropriate or is an adjustment of this regulation necessary?
2. What measures are appropriate to both increase the sustainability of meat & dairy production, and, most importantly, to reduce their consumption globally?
3. How sustainably is land currently used and what can be done to improve it?

5. Explanatory section per QARMA

- a. **“Is the classification into the three different groups of Annex I, Annex II and Non-Annex I Parties still appropriate or is an adjustment of this regulation necessary?”**

History/background of the problem

The issue being debated in the UNFCCC during GrunnMUN 2020 is how global sustainable land use can be achieved without compromising the need for socio-economic growth. This is a very complex issue and the UNFCCC was aware from the outset that there can be no universal approach for all parties given their different stages of economic development. Therefore, the Parties to the Convention have been divided into different groups with different responsibilities. As already mentioned in the 'Problem specification' of this background paper, these three groups are called Annex I, Annex II and Non-Annex I Parties.

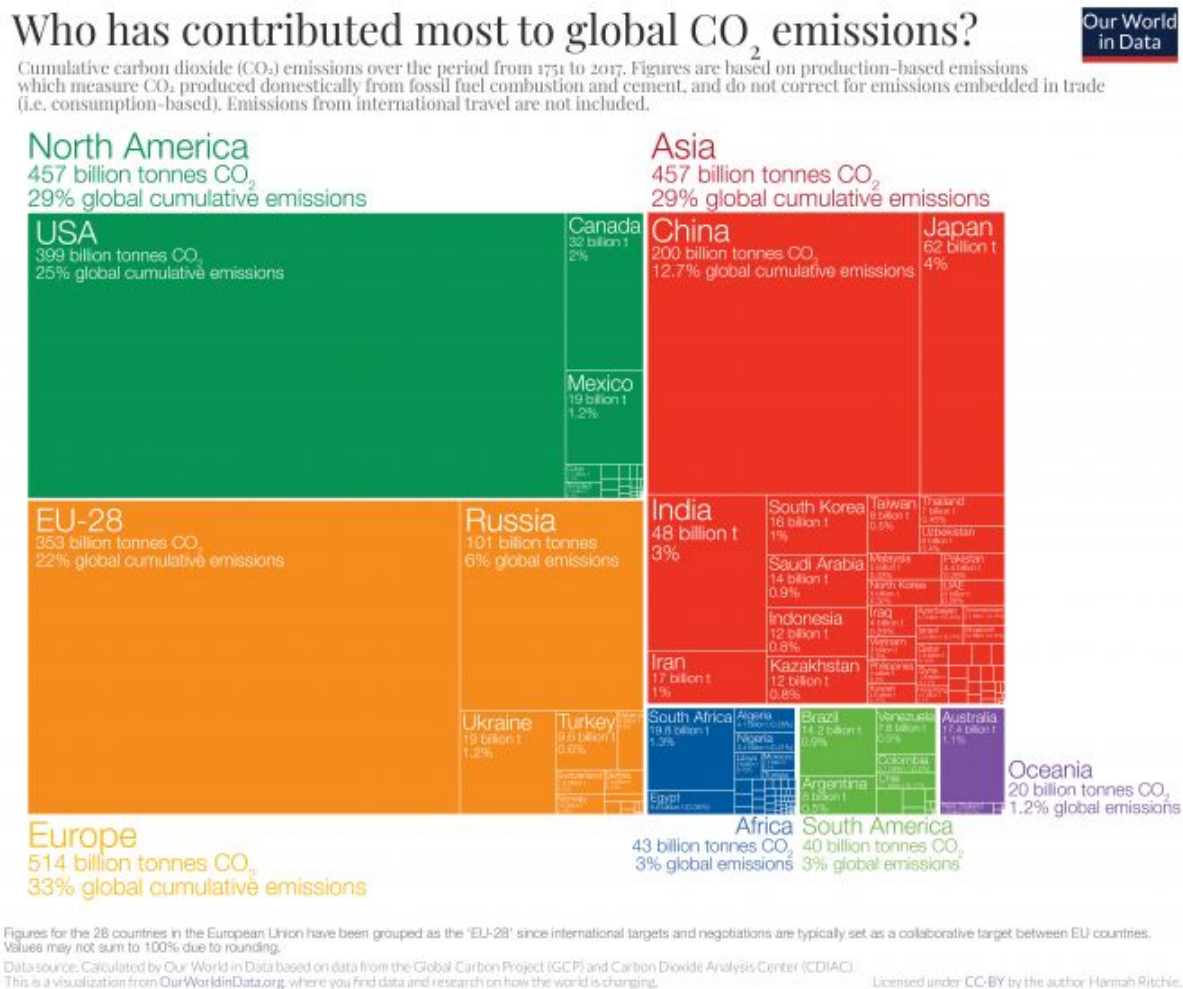
Before explaining the specific commitments of the different groups, let us first take a look at the historical background. The idea was that there are certain countries that were responsible for the majority of emissions in the past and are still responsible for a majority of the emissions today and should therefore have a special responsibility in achieving the goals of the UNFCCC.¹⁵ These countries were named Annex I Parties. In the section ‘Relevant actors/institutions’ we will take a closer look at the countries in these three different groups, but for the moment it is

¹⁵ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

important to know that most of them belong to the Organization for Economic Cooperation and Development (OECD).

One term that is relevant here is 'Cumulative CO2 Emissions' which allows you to compare the total contribution to global emissions of different countries worldwide. 'Our World in Data' provides a detailed explanation of this method for comparing different CO2 emissions and supports the analysis with several graphs.¹⁶ As explained by 'Our World in Data', this value is calculated by adding up each country's annual CO2 emissions over a specified period of time. In the graph you can see below, they used the values between 1751 and 2017. It is noteworthy that the United States of America is the main emitter of CO2 and is responsible for around 25% of historical emissions.

Figure 1: Who has contributed most to global CO2 emissions?



¹⁶ "CO2 and Greenhouse Gas Emissions," Our World in Data, accessed December 29, 2019, <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>.

In addition, industrialised countries have committed themselves to providing special support to developing countries through financial support for their climate protection measures.¹⁷ This financial support is coordinated by a system of grants and loans which has been set up through the UNFCCC.¹⁸ The reason why the industrialized countries are given a leading position is that developing countries have not yet reached the same level of economic development as the Annex I Parties. The UNFCCC recognises the need for economic development, with particular emphasis on the importance for developing countries.¹⁹ It also assumes that the share of greenhouse gas emissions will logically increase as industries in developing countries develop.²⁰ The challenge, however, is to limit these emissions in order to achieve the objective of the Convention, while ensuring that their socio-economic growth is not hindered.²¹

In the UNFCCC this is stated as follows:²²

“Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs”.

“Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty”.

Relevant actors/institutions

Before we can explain the ‘Recent developments’, we must now take a more concrete look at the actors and the three different groups that have already been briefly mentioned. Today the UNFCCC with its 197 Parties to the Convention has an almost universal membership.²³ However, these Parties to the Convention are divided into the three groups of Annex I, Annex II and Non-Annex I Parties. To find out which group your country belongs to, you can either look at the UNFCCC Convention or check the glossary on the United Nations Climate Change website. Both links can be found in the footnotes below and in our list of ‘Sources for further research’.²⁴

¹⁷ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

¹⁸ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

¹⁹ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

²⁰ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

²¹ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

²² United Nations 1992, “United Nations Framework Convention on Climate Change.”

²³ UNFCCC, “What is the United Nations Framework Convention on Climate Change?”

²⁴ United Nations 1992, “United Nations Framework Convention on Climate Change”,

<https://unfccc.int/resource/docs/convkp/conveng.pdf>.

Let's start by explaining the Annex I Parties in more detail. The following definitions are taken from the official website of the United Nations Climate Change.²⁵ The Annex I Parties consist of the 24 original OECD member states, the European Union and 14 countries with economies in transition. Two of the things these so-called Annex I Parties agreed to was returning their greenhouse-gas emissions to 1990 levels by 2000 and accepting certain emission targets between 2008 and 2012. Secondly, the Annex II Parties only consist of the 24 original OECD member states and the European Union, but don't include several economies in transition, such as the Russian Federation. These countries have the special obligation to provide financial resources and facilitate technology to developing countries in order to achieve the goals of the UNFCCC. Lastly, the Non-Annex I Parties include all those countries that have ratified the UNFCCC and that are not included in one of the two previous groups. These countries should enjoy the special support of the industrialised countries, listed in the previous two groups.

Recent developments

The question now being asked by several countries is whether this division into the three different groups is still appropriate or whether a change is needed. It is argued here that 'regulation has been overtaken by reality'.²⁶ This paragraph summarises some of the arguments on this subject.²⁷ Opponents of this regulation point out that emerging countries such as Brazil, China and India, as Non-Annex I Parties, are exempted from reducing their emissions and that the industrialised countries, the Annex I and Annex II Parties, play the main role in reducing greenhouse gases. Reference is made to the fact that China has long since become the world's largest CO₂ emitter, followed by the USA, the EU-28, India and Russia. They therefore demand that the sharply increased economic performance of the emerging economies and their increasing share of global emissions must be taken into account and that all states must take on climate protection commitments. However, this is not readily accepted by the Non-Annex I Parties concerned, as such a new regulation would impose new obligations on them.²⁸

"Glossary of climate change acronyms and terms," UNFCCC, accessed December 30, 2019, <https://unfccc.int/process-and-meetings/the-convention/glossary-of-climate-change-acronyms-and-terms#a>.

²⁵ UNFCCC, "Glossary of climate change acronyms and terms."

²⁶ "Klimarahmenkonvention," Bundesministerium für Umwelt, Naturschutz und Nukleare Sicherheit, accessed December 29, 2019,

<https://www.bmu.de/themen/klima-energie/klimaschutz/internationale-klimapolitik/klimarahmenkonvention/>.

²⁷ Bundesministerium für Umwelt, Naturschutz und Nukleare Sicherheit, "Klimarahmenkonvention."

²⁸ Fuzuo Wu, "China's Pragmatic Tactics in International Climate Change Negotiations: Reserving Principles with Compromise," *Asian Survey* 53, no. 4 (July/August 2013): 788, <https://www.jstor.org/stable/10.1525/as.2013.53.4.778>.

This trend of increasing emissions can be illustrated by two graphs. The first graph shows how the total annual CO2 emissions of the different regions have changed between 1751 and 2017, and the second graph compares the CO2 emissions of the countries in 2017.²⁹

Figure 2: Annual total CO2 emissions by world region

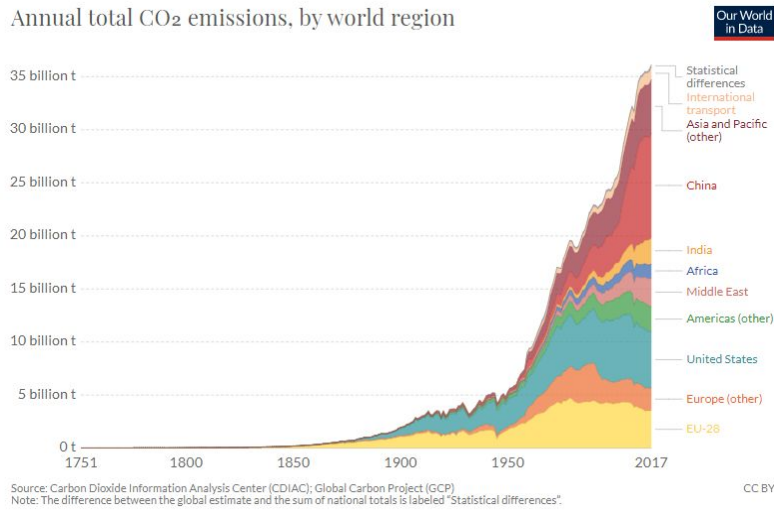
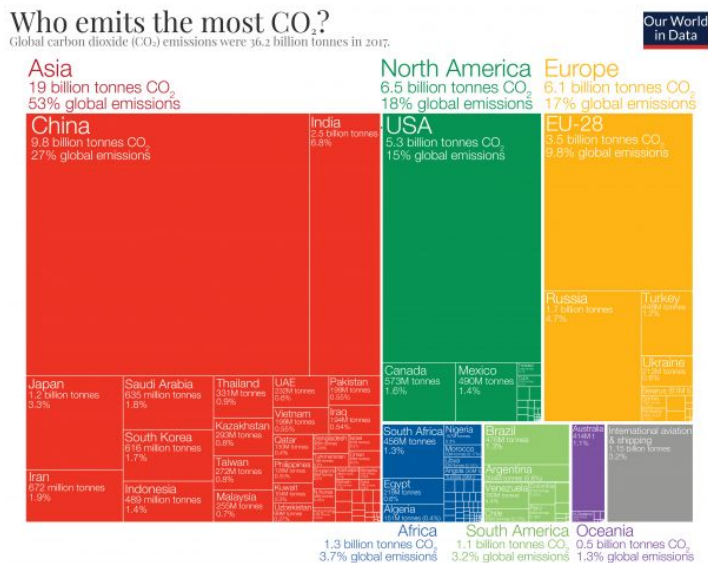


Figure 3: Who emits the most CO2?



Shown are national production-based emissions in 2017. Production-based emissions measure CO₂ produced domestically from fossil fuel combustion and cement, and do not adjust for emissions embedded in trade (i.e. consumption-based).

Figures for the 28 countries in the European Union have been grouped as the "EU-28" since international targets and negotiations are typically set as a collaborative target between EU countries. Values may not sum to 100% due to rounding.

Data source: Global Carbon Project (GCP).
 This is a visualization from OurWorldInData.org, where you find data and research on how the world is changing. Licensed under CC BY by the author Hansini Ritchie.

²⁹ Our World in Data, "CO₂ and Greenhouse Gas Emissions."

International Approaches that have already been undertaken

Finding a solution to this issue has been difficult so far. Two sides with different opinions and interests face each other. On the one hand, there are some Annex I Parties, such as Germany, who call for a stronger role of some Non-Annex I Parties, such as China, India and Brazil because of their increasing economic performance and the associated greenhouse gas emissions. On the other hand, there are the Non-Annex I Parties, which refer to the higher cumulative emissions of the industrialized countries and claim that they first want to improve their economic performance before taking on the same obligations as the Annex I Parties. The question now arises whether the classification into the three different groups of Annex I, Annex II and Non-Annex I Parties is still appropriate or whether an adjustment of this regulation has become necessary. In addressing this issue, the subject of this Council should be kept in mind, namely how to achieve globally sustainable land use without compromising the need for socio-economic growth.

b. “Should global meat consumption be reduced? If so, how can this be achieved?”

History/background of the problem

1000 years ago, farming made up less than 4% of the world’s habitable land.³⁰ In the present day, *half* of all habitable land on Earth is used for agriculture, almost 80% of which is used for livestock.³¹ The term ‘livestock’ refers to “animals such as cows, sheep, etc. that are kept or traded as a ‘source of income’ and accounts for all land that is used for the production of meat and dairy, including that of the production of animal feed and grazing.³² Both the meat and the dairy industry are responsible, therefore, for a very high percentage of the global greenhouse gas emissions, namely 18%; this is 5% more than the combined exhaust from all transportation.³³ In terms of carbon dioxide, livestock and its byproducts account for 51% of the global CO₂ emissions. However, while livestock takes up most of the world’s agricultural land, it only produces 18% of the world’s calories and 37% of total protein.³⁴ The graph below depicts the different land uses with respect to food production:

³⁰ Ritchie, Hannah, and Max Roser. “Land Use.” Our World in Data, November 13, 2013, accessed January 6, 2020, <https://ourworldindata.org/land-use>

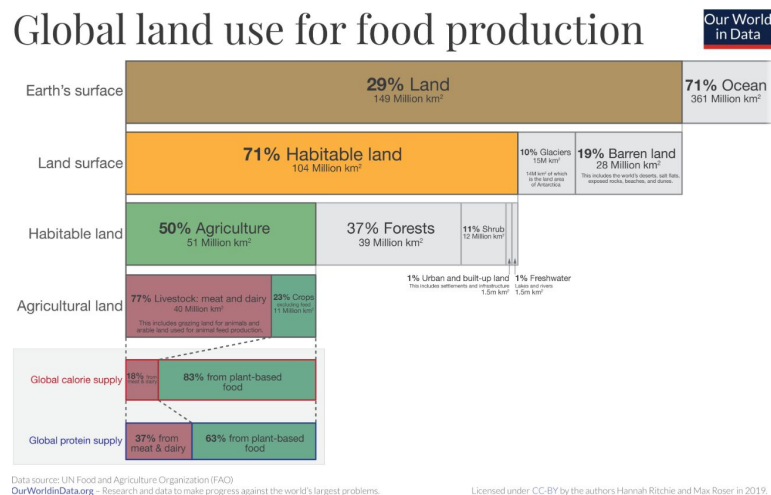
³¹ Our World in Data, “Land Use”

³² Cambridge Business English Dictionary © Cambridge University Press

³³ Steinfeld, Henning. *Livestock’s Long Shadow: Environmental Issues and Options*. Rom: FAO, 2006.

³⁴ Our World in Data, “Land Use”

Figure 4: Global land use for food production



Moreover, it is not only the low food outcomes per unit of land or the emission of greenhouse gases that pose questions regarding the feasibility of producing animals for food, but also the deforestation that is caused, as well as the amount of water that is necessary for their production. In the US, for example, agriculture is responsible for 80-90% of its water consumption.³⁵

Therefore, when looking at the holistic picture of the meat and dairy industry, it seems that the current form of livestock production is in fact an inefficient and unsustainable process.

Recent developments

The negative environmental effects caused by animal agriculture alongside our rapidly increasing population that is expected to reach almost 10 billion by 2050 has encouraged innovators to seek alternatives and propose solutions.³⁶

‘Lab grown’ or ‘cultured’ meat is one of such proposed solutions, whereby meat is produced by in vitro cell culture of animal cells, using tissue engineering techniques traditionally used in regenerative medicine.³⁷ As opposed to conventional meat, this innovative solution is claimed to potentially use less water, land, and produce less greenhouse gases, resulting in a substantially lower environmental impact.³⁸ This concept was popularised by Jason Matheny in the early

³⁵ “Irrigation & Water Use.” USDA ERS - Irrigation & Water Use. Accessed January 6, 2020. <https://www.ers.usda.gov/topics/farm-practices-management/irrigation-water-use/background.aspx>.

³⁶ Our World in Data, “Land Use”

³⁷ Datar, I., and M. Betti. “Possibilities for an in Vitro Meat Production System.” *Innovative Food Science & Emerging Technologies* 11, no. 1 (2010): 13–22. <https://doi.org/10.1016/j.ifset.2009.10.007>.

³⁸ Mehta, Devang. “Lab-Grown Meat Could Bring about the next Agricultural Revolution.” *Massive Science*, October 8, 2018. <https://massivesci.com/articles/cultured-lab-grown-meat-impacts-on-society/>.

2000s after creating the first non-profit organisation dedicated to lab-grown meat research: New Harvest. In 2013, a professor in Maastricht University, Dr Post, produced the first burger patty directly from cells.³⁹ However, due to the lack of research performed, cultured meat has not yet been commercialised.

The plant-based food market, on the other hand, is readily commercialised and is growing rapidly every year. The Swiss multinational investment bank and financial services company UBS forecasted that the plant-based-protein or -milk markets will grow by 28% per year, from \$4.6 billion in 2018 to \$85 billion in 2030.⁴⁰ Brands like Beyond Meat have achieved a product that uses less resources and area of land than conventional meat products. The figures below are based on a peer-reviewed study at the University of Michigan, comparing the environmental impact of a Beyond Burger to a ¼ lb U.S. beef burger.⁴¹



Despite the fact that these products appear very promising, there are still questions that arise: are the crops used for plant-based meat grown sustainably? When will lab-grown meat be commercialised? Will it be accepted by society? And one of the most concerning questions: how can the market of such “expensive” products be implemented in less economically developed countries that have no access to the required technologies? The latter concern proves to be a complex issue that must be addressed, since, as you will read in the upcoming subsection, developing countries are mostly the ones producing livestock and its byproducts. In other words, not only may they not afford the products, but the animal agriculture industry may account for a considerable fraction of certain developing countries’ revenues, directly translated into the socio-economic growth thereof.

³⁹ “Growing Meat in the Lab: Scientists Initiate Action Plan to Advance Cultured Meat.” ScienceDaily. ScienceDaily, September 7, 2011. <https://www.sciencedaily.com/releases/2011/09/110906085145.htm>.

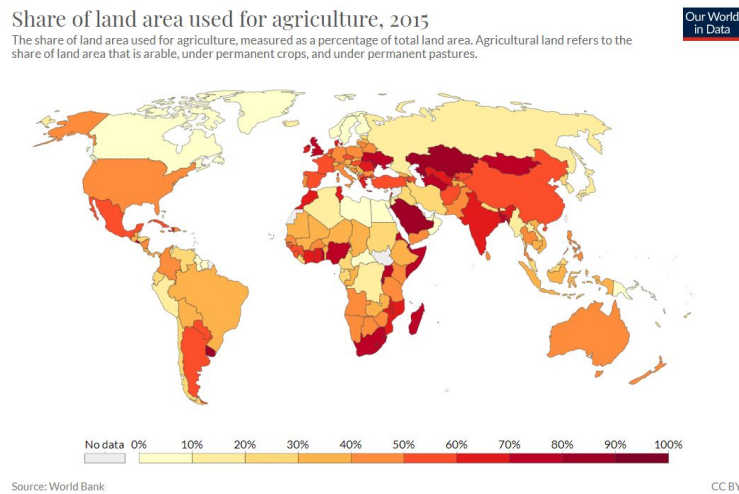
⁴⁰ Y. Khan, “UBS Predicts Plant-Based Meat Sales Could Grow by More than 25% a Year to \$85 Billion by 2030 | Markets Insider.” Business Insider. Business Insider. Accessed January 6, 2020. <https://markets.businessinsider.com/news/stocks/beyond-meat-ubs-plant-based-meat-market-85-billion-2030-2019-7-1028367962>.

⁴¹ Keoleian, Martin C. Heller, Gregory A. “Beyond Meat's Beyond Burger Life Cycle Assessment: A Detailed Comparison between a Plant-Based and an Animal-Based Protein Source.” Beyond Meat's Beyond Burger Life Cycle Assessment: A detailed comparison between a plant-based and an animal-based protein source | Center for Sustainable Systems. Accessed January 7, 2020. <http://css.umich.edu/publication/beyond-meats-beyond-burger-life-cycle-assessment-detailed-comparison-between-plant-based>.

Relevant actors/institutions

The map below highlights what countries have the highest percentage of land used for agriculture. It ranges from 10% in countries like Canada, to more than 80% in Uruguay, Kazakhstan or Saudi Arabia.

Figure 6: Share of land area used for agriculture (2015)



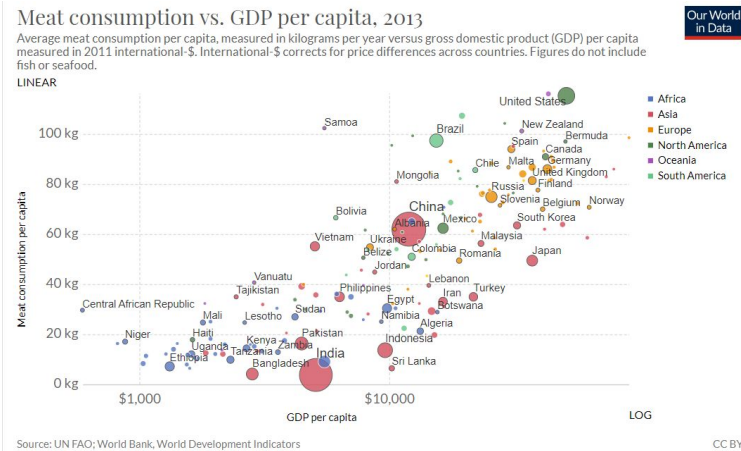
Whilst some countries focus more on the production of animal feed and other on the production of livestock itself, there is no specific country to ‘blame’. The U.S. is the largest beef producer in the world, followed by Brazil and the EU; the three regions combined accounted for 47% of all beef produced.⁴² However, the largest consumers of beef are Uruguay, Argentina and Hong Kong, respectively.⁴³ Overall, the trend follows that the richer the country, the higher the meat consumption:⁴⁴

⁴² USDA. Accessed January 7, 2020. <https://www.usda.gov/>.

⁴³ USDA. Accessed January 7, 2020. <https://www.usda.gov/>.

⁴⁴ Ritchie, Hannah, and Max Roser. “Meat and Dairy Production.” Our World in Data, August 25, 2017. <https://ourworldindata.org/meat-production>.

Figure 7: Meat consumption vs. GDP per capita (2013)



Therefore, in terms of actors, almost every country in the world, though to varying extents, plays a role, since they are either producers or consumers of animals.

International organisations such as the UN are mostly involved in raising awareness and encouraging countries to take action through policy development and implementation, for example by publishing papers: “*Global meat consumption must fall to curb global warming, reduce growing strains on land and water and improve food security, health and biodiversity*”, a United Nations report on the effects of climate change concluded.⁴⁵ Like the UN, many institutions are directing research on the many facets of climate change, with the aim to find innovative solutions to the challenges we are facing.

International approaches that have already been undertaken

The UN urged a global move towards a dairy and meat free diet almost a decade ago. The release of the IPCC report summary in August 2019 (designed to inform “upcoming climate negotiations amid the worsening of the climate crisis”) further inspired authors to write and raise awareness of the findings.⁴⁶ Although the report does provide a policy recommendation to reduce meat consumption,⁴⁷ no country, city or person can be told what to eat.

How can we achieve a significant reduction of meat & dairy production/consumption world wide? How can this be attained in Annex I, II and Non-Annex I countries?

⁴⁵ Chestney, Nina. “U.N. Flags Need to Cut Meat to Curb Land Use Impact on Global Warming.” Reuters. Thomson Reuters, August 9, 2019. <https://www.reuters.com/article/us-climate-change-ipcc-land/u-n-flags-need-to-cut-meat-to-curb-land-use-impact-on-global-warming-idUSKCN1UY0UJ>.

⁴⁶ Schiermeier, Quirin. “Eat Less Meat: UN Climate-Change Report Calls for Change to Human Diet.” Nature News. Nature Publishing Group, August 8, 2019. <https://www.nature.com/articles/d41586-019-02409-7>.

⁴⁷ Schiermeier, Quirin, “Eat less meat: UN Climate-Change Report Calls for Change to Human Diet.”

c. “How sustainably is land currently used and what can be done to improve it?”

History/background of the problem

‘Sustainable land use’ is defined by Wageningen University & Research as the concept that “integrates knowledge on soil, water, biodiversity and environmental management in order to address conflicting claims to natural resources, while maintaining social and economic security and preserving the environment”.⁴⁸

In general, the use of land in the world is not performed in a sustainable manner. Climate change, air pollution, water pollution, land pollution, noise pollution, deforestation, resource crisis, etc. are all classified within the ‘top 10 current environmental issues’, and they are all linked to how we make use of our lands.⁴⁹ From the use of pesticides, to the installation of a coal power plant, transport infrastructure or intensive animal agriculture. Different regions of the world have different resources and thus make use of land in different ways. Yet, in order to not deprive the quality of life of future generations, the use of land must be achieved in a sustainable manner.

How can we encourage the consideration of sustainability within every possible aspect of land use, whilst considering the differences in natural and economic resources experienced by countries across the globe and not compromising their specific socio-economic needs?

This issue is highly complex and must be carefully reviewed per area or region to provide the most significant solutions.

Recent developments

In recent years, ‘organic’ or ‘biological’ food has become increasingly popular to the public. It refers to the food produced by methods that comply with the standards of organic farming.⁵⁰ Although standards vary worldwide, they usually feature practices that cycle resources, promote ecological balance, and conserve biodiversity.⁵¹ In fact, selling food with an organic label is regulated by governmental food-safety authorities, such as the National Organic Program of the USDA,⁵² or the European Commission.⁵³

⁴⁸ “Sustainable Land Use.” WUR. Accessed January 8, 2020.

<https://www.wur.nl/en/Research-Results/Research-Institutes/Environmental-Research/Programmes/Sustainable-Land-Use.htm>.

⁴⁹ Rinkesh. “10 Current Environmental Issues.” Conserve Energy Future, December 25, 2016.

<https://www.conserve-energy-future.com/current-environmental-issues.php>.

⁵⁰ “Pesticides in Organic Farming.” OCF. Accessed January 7, 2020.

<https://www.ocf.berkeley.edu/~lhom/organictext.html>.

⁵¹ “Pesticides in Organic Farming”, OCF.

⁵² “National Organic Program.” USDA. Accessed January 7, 2020.

<https://www.ams.usda.gov/about-ams/programs-offices/national-organic-program>.

In 2013, a review of organic farming for sustainable agriculture was performed in Northern India.⁵⁴ It discussed that the use of pesticides, fertilisers and irrigation water in such areas, in combination with high-yielding production technology, resulted in a very efficient use of land, since a large amount of food could be produced using minimal land and resources. This act was what this region needed, since hunger and malnutrition frequently occurred. Furthermore, it concluded that once hunger had been eradicated in the region, the most appropriate form of farming would then be organic farming because of its ability to “provide quality food without adversely affecting the soil’s health and the environment”.⁵⁵ Moreover, it stated that “there is a need to identify suitable crops/products on a regional basis for organic production that has international market demands. The whole region as such cannot afford to go for organic at a time because of its commitments to insure food and nutritional security. This will provide ample opportunity for employment and bring prosperity and peace in the region.”.⁵⁶

Therefore, as is seen from this example, implementing organic farming to a given extent may be beneficial, affordable and appropriate; it is a matter of identifying and executing opportunities per region.

Other similar and relevant approaches include ‘climate-smart agriculture’,⁵⁷ using “technological systems to provide high quality data to help design, monitor and evaluate effective policies”,⁵⁸ and studying the impact of “land use and land cover change (LUCC) on the functioning of socioeconomic and environmental systems with important trade-offs for sustainability, food security, biodiversity and the vulnerability of people and ecosystems to global change impacts”.⁵⁹

Relevant actors/institutions

Private businesses, governments, international organisations and consumers all have a role in achieving sustainable land use. As mentioned, that of international organisations is critical, as

⁵³ “Becoming an Organic Farmer.” European Commission - European Commission, October 7, 2019.

<https://ec.europa.eu/info/food-farming-fisheries/farming/organic-farming/becoming-organic-farmer>.

⁵⁴ Yadav, S. K., and Subhash Babu. “A Review of Organic Farming for Sustainable Agriculture in Northern India.” *International Journal of Agronomy* 2013 (2013): 1–8. <https://doi.org/10.1155/2013/718145>.

⁵⁵ Yadav, S. K., and Subhash Babu. “A Review of Organic Farming for Sustainable Agriculture in Northern India.”

⁵⁶ Yadav, S. K., and Subhash Babu. “A Review of Organic Farming for Sustainable Agriculture in Northern India.”

⁵⁷ “Climate-Smart Land Use.” WUR. Accessed January 7, 2020.

<https://www.wur.nl/en/Research-Results/Research-Institutes/Environmental-Research/Programmes/Sustainable-Land-Use/Climate-smart-land-use.htm>.

⁵⁸ “Mobilising the Data Revolution.” WUR. Accessed January 7, 2020.

<https://www.wur.nl/en/Research-Results/Research-Institutes/Environmental-Research/Programmes/Sustainable-Land-Use/Mobilising-the-data-revolution.htm>.

⁵⁹ “Fair and functional land use” WUR. Accessed January 7, 2020.

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they have a powerful voice to raise awareness of an issue to the parties involved. In addition, governments must then develop policies, implement them, analyse their suitability, and redevelop them to ensure that the issue is being addressed according to the newest findings. Thirdly, private businesses must make changes to their policies where applicable, in line with government affairs. Finally, consumers have the power of choice; when they choose to buy a certain product, they are essentially investing in a certain industry and therefore a certain land-use.

In terms of countries, the top 3 ranked for 'least sustainable' are the following:⁶⁰

Brazil is the least sustainable in the world due to its increasing loss of natural forest and therefore biodiversity, its greenhouse gas emissions, and its water pollution. The US comes in at second place, for its massive use of pesticides and its greenhouse gas emissions. China follows up as a result of its high greenhouse gas emissions and its water pollution, with more than 20 million people having no access to clean, drinking water.

International approaches that have already been undertaken

As was discussed in the previous QARMA, the main international approach that has been undertaken is in the form of raising awareness. As opposed to reducing meat and dairy intake in the human diet, a more general sustainable use of land is easier to implement through government policy. Limiting the use of pesticides in Annex I countries, careful planning and review of countries' upcoming projects to consider sustainable land use, the use of mobile data to monitor land use efficiency, and other measures are possible to enforce. The question is: how do we intervene in a way that does not compromise, but ideally *improves* a country's socio-economic growth?

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⁶⁰ Wagemans, Joey. "The Other Side: the Least Sustainable Countries." TU Delft Open Research.net. Accessed January 7, 2020. <https://tudelft.openresearch.net/page/13465/the-other-side-the-least-sustainable-countries>.

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