

## Brief

### Climate change and gas emissions: is livestock really the problem?

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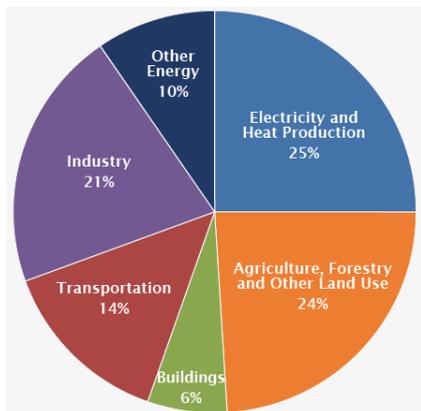
For some time, we have been hearing that livestock is one of the main sources of greenhouse gas emissions on the planet. Hardly any other sector faces more global pressure to reduce emissions than livestock. Quickly, this pressure has spread with remarkable speed.

Without a doubt, action to mitigate emissions and combat climate change is urgent, but actions may be insufficient and economically costly, if they start from the wrong premises.

In this sense, it is necessary to raise the issue of emissions on a scientific basis and ensure fairness in the analysis of these data. So, when analyzing the livestock sector and its impact on climate change, at least six concepts can be raised that are worth analyzing to put the emissions of this sector in the correct context.

**First**, it is necessary to review the information from the national inventories submitted by the countries to the United Nations Framework Convention on Climate Change (UNFCCC). Based on that data, the report of the Intergovernmental Panel on Climate Change (IPCC) estimates agricultural emissions, including land use change (where deforestation from any cause is computed), as 24% of total emissions in 2014. So, how is it possible that agriculture is imputed 35% of the 2014 emissions? There is only one logical reason: emissions from agri-food systems are being computed differently than those from other sectors. This is clear in the case of livestock where the emissions of its entire value chain are computed. Are the emissions from rest of the sectors accounted for in the same way? Clearly not. Even more, that same report indicates that the AFOLU<sup>1</sup> sector is the only one that reduced emissions since 2000. There we found the first confusion in the handling of the data.

#### Global Greenhouse Gas Emissions by Economic Sector



Source: United States Environmental Protection Agency based on IPCC (2014).

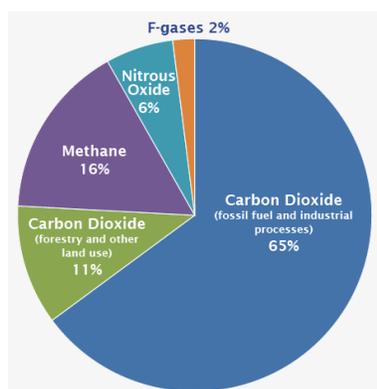
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<sup>1</sup> Agriculture, Forest and Other Land Use

**Second**, these figures seem to be overestimated since the 2019 update of the 2006 IPCC Guidelines for National Inventories already shows changes in nitrous oxide emissions from livestock droppings. National inventories are just beginning to use this methodology, and therefore, they are not yet reflected in the official data. Already the update of the 2006 IPCC Guidelines had incorporated substantial improvements in the measurements of emissions from agriculture in relation to the 1996 IPCC Guideline. This is repeated now, and a large part of the discussion papers on the matter have not yet finished internalizing these methodological changes.

**Third**, the differences in the dynamics of carbon and methane in the atmosphere also seem to be unknown. Even when it is true that methane is 28 times more powerful than carbon, it is also true that its life span is around 12 years against more than 100 years it takes for carbon to degrade in the atmosphere. So not all emissions are the same. In fact, we are still trying to offset the carbon emissions of the second decade of the 20th century, but if the number of cattle had not increased in the last twelve years, the sector's emissions would have remained stable and would not accumulate since they would be degrading at the same rate as they are generated. Unfortunately, this was not the case. According to FAO, cattle herd increased by 7% between 2005 and 2019. It remains to be seen if the improvement in diets has had any differential impact on emissions. Technology to reduce methane emissions in ruminants is in full development, but that type of differential measurements will still take a long time to materialize.

### Global Greenhouse Emissions by Gas



Source: United States Environmental Protection Agency based on IPCC (2014).

**Fourth**, and very important. It seems to be unknown the fact that agriculture is the only productive activity with enough capacity to synthesize carbon from the atmosphere and capture it in the soil (also the oceans, rivers and lakes have a great capacity to capture carbon). Since a large part of livestock is developed on grasslands, are net emissions of the sector as computed? It wouldn't seem so. In this sense, there are studies that suggest neutrality or even a favorable balance in emissions for pastoral and silvopastoral livestock (EMBRAPA, 2015; Viglizzo et al, 2019). Scientific studies in this regard are just beginning and it is to be expected that the equation regarding grass-fed livestock will change substantially. Countries are also beginning to submit alternative methodologies in their annual reports to the UNFCCC. Therefore, since the capacity to capture carbon in agriculture and livestock is not yet fully understood, as shown by the successive refinements of the IPCC guidelines, it is not reasonable to concentrate all mitigation actions in a sector that, ideally, could be carbon neutral.

**Fifth**, the use of technology associated with better agricultural practices has allowed greater productive efficiency while reducing the environmental impact. Along with the increase in population, there is a growing demand for food in order to ensure food security. Undoubtedly, this implies greater pressure on the level of emissions. However, while Global population increased by 90% from 3.6 to 6.9 billion between 1970 and 2010, global agricultural land increased by 7% during the same period (IPCC, 2014). As a result, per capita cropland availability declined from 0.4 to 0.2 ha and agri-food productivity increased considerably, which results in fewer emissions per unit of product. The technological package applied in these new agri-food systems (no till, precision agriculture, use of cover crops, etc.) is relatively recent, it is not yet applied equitably at a global level, and it is in continuous improvement. Therefore it is expected that the sector's impact on emissions will be reduced.

**Sixth** and final, the social and agroecological consequences of decreasing livestock production also seem to be ignored. It must be taken into consideration that a large part of global livestock is developed by small producers, being this activity their primary source of income. Furthermore, in most countries, the advance of agriculture has displaced livestock farming to marginal lands, with little capacity for other productive activities. So, if livestock production must be reduced, shouldn't there be a containment policy for these producers and their families?

Undoubtedly, the agricultural sector, in general, and livestock, in particular, cannot evade climate change considerations and must make all the necessary efforts to mitigate its emissions. However, it is striking that the public debate on the responsibility for climate change seems to focus primarily on the agri-food sector. As a minimum, there is a real lack of understanding of the issue, which confuses the average citizen, models the behavior of consumers and affects the livelihoods of millions of agricultural producers around the world.

Fighting misinformation should be the first measure to achieve truly effective action against climate change. Not all countries, sectors and gases affect the atmosphere in the same way. Dumping the information from the national inventories presented to the UNFCCC in an easy-to-consult- database (by country, sector, gas, etc.) seems to be increasingly urgent to avoid discretionary handling of the data.

At the same time, efforts should be continued to further refine the IPCC guidelines in order to achieve increasingly reliable carbon balance estimates and not to prematurely punish sectors that have a high potential for capture. Changing the lexicon of discussions from carbon emissions to carbon balance is necessary in order to highlight the sectoral differences in terms of mitigation.

This does not exempt the agricultural sector from its responsibilities, but at least, it puts it on an equal footing vis-à-vis the emissions of other sectors, improves the general understanding of the issue, and seeks to develop more effective mitigation policies.