GRUPO DE PAÍSES PRODUCTORES DEL SUR

CARBON EMISSION AND AGRICULTURE IN THE MERCOSUR COUNTRIES

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1. Introduction

Achieving a reduction in global emissions is an immediate necessity. This applies to all sectors and agriculture does not escape these demands. The share of Agriculture in world GHG emissions has dropped from 13.2% in 1994 to 10.49% in 2014, and the trend continues to be a downward one (Elverdin, 2018).[3] However, it must continue to make efforts to further reduce sectoral emissions, make more efficient and sustainable use of natural resources, and at the same time increase the global food supply to feed a growing population with increased purchasing power.

This requires a careful and a global integrated approach to reduce carbon emission and protect the natural resources and the biodiversity, while increasing productivity and food quality with production systems which are friendly with the environment. Any proposal should take into account a global approach, not limited to what happens in the food production value chains within a country or a region, but taking also into consideration that the trading system is crucial to cope with current and future regional imbalances in production and consumption.

Such global approach needs to keep in mind that current production systems and the technology applied by the farmers differ substantially among regions and countries around the world. Therefore the challenges to move to sustainable and equitable food systems require different actions, depending on the current characteristics of the respective production systems; the transformation of the production systems in each country has different paths and urgencies.

During the last decades, many countries begun such transformation processes aimed at developing more sustainable production systems, which are friendly with the environment and productive enough to allow them to be net food exporters (the so called "sustainable intensification" process). Some of them are the leading world exporters of most of the food that is traded. In this sense, the MERCOSUR is the largest net food exporter; and it has the potential to continue increasing food production in a sustainable way, to contribute to the global balance between production and consumption projected for next decades in different regions.

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[3] The share of Land-Used Changes and Forestry (LUCF) dropped from 11.2% in 1994 to 6.3% in 2014, albeit with some acceleration of emissions in the last five years.

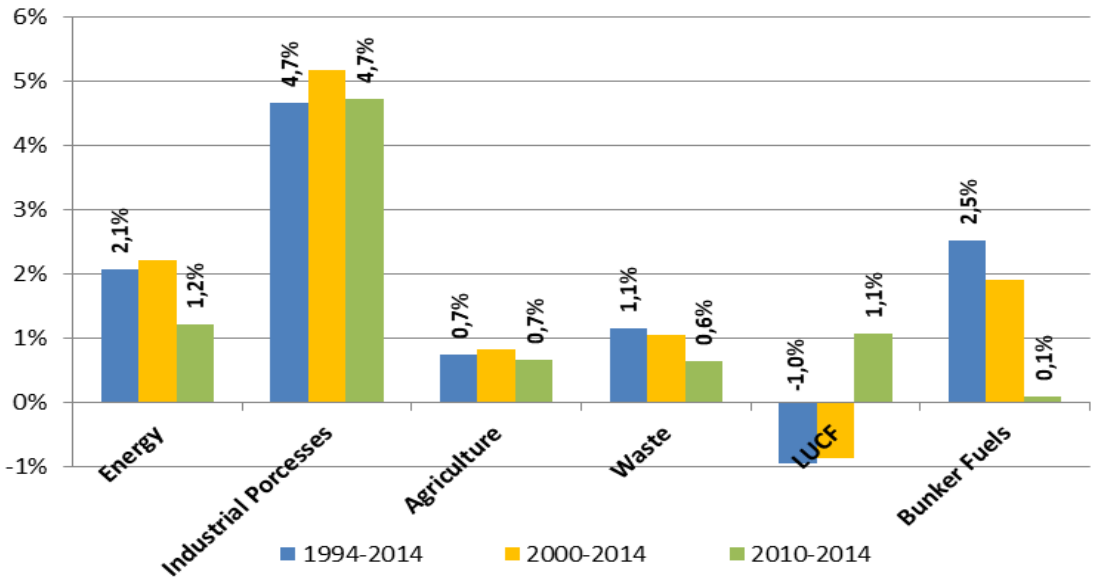
2. Agriculture Global Emissions

Looking at sectorial GHGs evolution, we find that the emissions of the worldwide agriculture sector have not increased significantly. In fact, between 1994 and 2014, agricultural emissions grew 16% (measured in $MtCO_2eq.$), while emissions from Land-Use Change and Forestry (LUCF) fell 18% during the same period.

Based on this performance, the share of agriculture in global GHG emissions fell from 13.2% in 1994 to 10.49% in 2014, with a continuing downward trend. Furthermore, the share of LUCF in global emissions fell from 11.2% in 1994 to 6.3% in 2014, albeit with a certain acceleration in emissions during the last years.

Looking at shorter periods (2010-2014), we find that while the agricultural sector continued to exhibit a downward trend in emissions (from an annual growth rate of 0.8% in 2000-2014 to 0.6% a year between 2010 and 2014), the LUCF sector reversed its downward trend and increased its emissions once more by 1.06% per annum during that period, which calls for a greater focus on the subject (Figure I).

Figure I: Evolution of global GHG emissions by sector during the period 1994 - 2014.*
(In $MtCO_2eq.$)



*Cumulative annual growth.
Source: Elverdin, 2018.

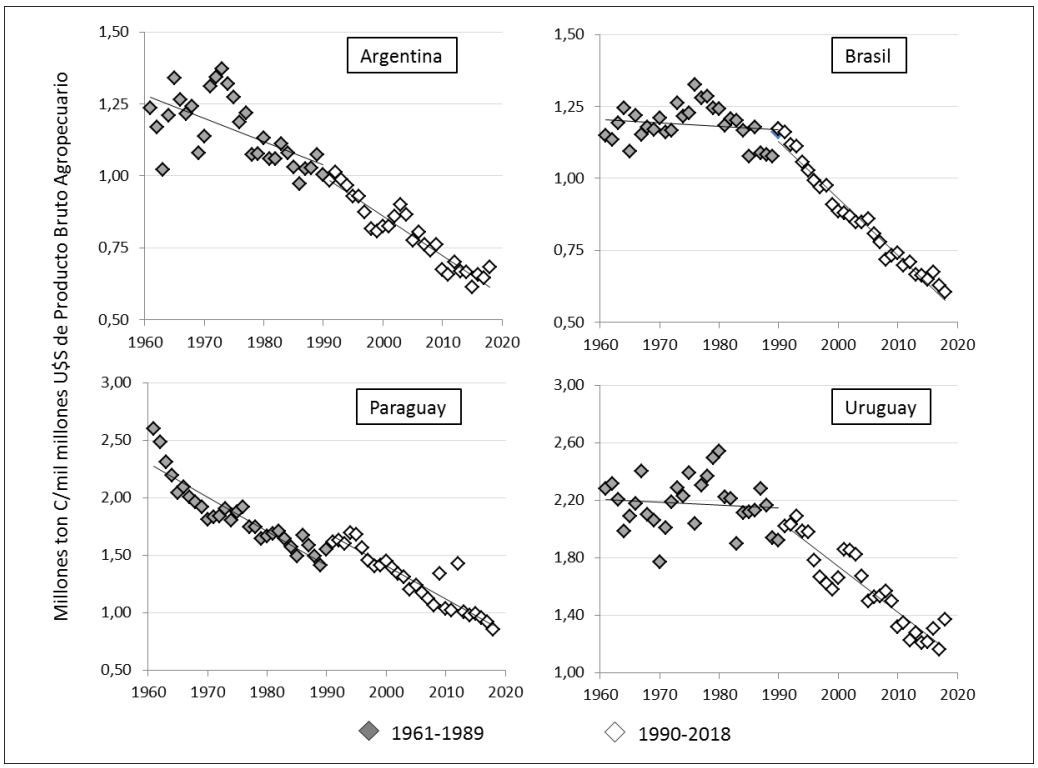
It should be highlighted that, even in a context of an increase in the world food production of about 65% between 1994 and 2014,[4] Agriculture and LUCF increased their GHG emissions by only 0.11% during the same period. This not only shows a marked reduction in emissions due to deforestation, but also entails improvements in agricultural productivity and in the use of more environmentally sustainable production systems (emissions by the agricultural sector, measured individually, increased 15.8% in the same period).

[4] FAOSTAT, food production index. See http://www.fao.org/faostat/es/#data/QI

3. Agricultural emission and sustainable intensification in MERCOSUR's countries

MERCOSUR's contribution to global food security is strategic, accounting for more than 35% of net agri-food total exports (Elverdin, 2020). At the same time the MERCOSUR countries have been substantially reducing carbon emissions in relation to gross agricultural product, showing a remarkable improvement in production efficiency in terms of emissions as shown in Figure II (Viglizzo, 2021) .

Figure II. Evolution of the relation between gas emissions and gross agricultural product in MERCOSUR countries.



Source: Viglizzo, 2021.

In addition to the provision of natural resources, this reduction in carbon emissions per unit of product was sustained by the continuous innovation of MERCOSUR farmers. During the last two decades the MERCOSUR food production systems have massively implemented technological and structural innovations that have boosted productivity with environmentally friendly production systems. This process, known as "sustainable intensification strategy," is based on the convergence of several technological innovations that were implemented gradually: no-till farming, crop rotations and cover crops; precision agriculture; improved seeds (entailing a lower use of agrochemicals and better use of rainfall); new chemical molecules in agrochemicals; integrated pest control; intensive use of information and communications technology; satellite image support; logistic innovations such as silo bags; post-harvest handling; precision nutrition, etc.

Summing up, the increase in the MERCOSUR net exports has been based not only in the endowment in natural resources, but also with better soil management and

production and marketing techniques, associated with new forms of organizing production. This process has allowed the MERCOSUR countries to significantly increase their agro-industrial production with a lesser impact on the environment.

4. Conclusions

Including Land-Use Change and Forestry (LUCF), the contribution of the region to the global emission reach 4.1% (Brazil 2.7%, Argentina 0.9%; Paraguay 0.4%, and Uruguay 0,04% (Elverdin, 2018). Nevertheless, the region needs to continue making efforts to increase agricultural productivity, while reducing environmental impacts and preserving natural resources.

The "Sustainable agricultural intensification strategy" makes possible to increase agricultural production without increasing environmental costs per unit produced, obtaining the maximum possible efficiency of the resources and inputs used, and reducing GHG emissions per product unit. Making progress in the use of Good Agricultural Practices (GAP) and Good Farming Practices (GFP) is essential, and the region is on the way. At the same time, the countries of the Southern Cone must focus on controlling illegal deforestation, where significant progress has been made, but it is still the target of most external criticism.

It should be noted that consumer demand for products set apart by their lesser environmental impact will be ever growing. Farmers in the region should not ignore this fact and should continue to implement technical solutions to promote environmental efficiency in food production, as it has been the case during the last two decades.

However, lack of information or errors of judgment by some NGOs concerning sector emissions are generating considerable pressure for the establishment of a growing number of new environmental barriers to trade, that are not supported by any scientific basis; but hey can have significant implications for farmers, on food production and therefore, on global food security.

Even more, non-scientific environmental barriers could even be counterproductive for global net emission reduction, as they might entail punishing those countries that are most efficient in terms of food production (measured in product units) in favor of less efficient countries. Conversely, the reduction of import barriers for environmentally efficient food products could be an effective way of achieving food security, while mitigating climate change (Papendieck and Idígoras, 2017).

Given that climate change has cross-border effects, its implications and its solutions must be global. The UN Food Systems 2021 is presented as an opportunity to discuss these issues in a comprehensive way. However, some bias is observed in its programming and institutional organization, dominated by a vision from scientists and the civil society (especially consumers and European NGOs); but there are missing the views and perspectives of the farmers and private sector involved in production and trade, particularly those of the net exporting countries such as MERCOSUR members.

Achieving the 2030 Sustainable Development Goals needs to integrate all visions. In fact, the general approach does not seems to prioritize enough the actions needed to improve the production systems around the world, and the international cooperation and trade to provide food security based on sustainable food systems. Achieving more efficient global

governance in terms of sustainable development of global agri-food systems should include these visions.

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