

**Track 1: Livestock sector in EU**

Moderator: Monique Remmers (NL)

Showcase presentation: John Muldowney (IE) on Irish initiatives to curb livestock emission while promoting growth and jobs (room 163).

The Livestock track is intended to initiate a deeper discussion on how EU and its member states can jointly promote sustainable, cost-effective, and cross-state flexible livestock management strategies, research programmes and incentives that can foster GHG mitigation as well as growth, jobs, and environmental benefits. The Livestock track will consist of two breakout sessions, both of which will be conducted under Chatham House rules, meaning no one will be cited directly or mentioned for their expressed views outside of the session room. In the last of the two sessions, participants will be invited to reflect and generate 2-3 concrete policy ideas on how EU legislation could promote GHG mitigation in livestock handling, manure management and use of fertilizers. In this paper and at the workshop this track includes manure management and use of fertilizers, the latter may however be relevant in the soil track as well.

## EU Livestock in the context of climate change

The livestock sector in the EU accounts for a large share of the total agricultural GHG emissions in the EU. Thus, reducing the GHG emission from the livestock sector is important in order to bring down EU's total (agricultural) GHG emissions. At the same time, any effort to promote the development and scaling-up of mitigation technologies and practices must account the multiple purposes of the sector, as well as the need for flexibility across member states.

The two largest sources of GHG emissions related to livestock production are enteric fermentation by ruminants (leading to emissions of CH<sub>4</sub>) and manure management (both CH<sub>4</sub> and N<sub>2</sub>O), which accounts for 44% and 15% of total agricultural GHG emissions, respectively. Despite improved livestock and agricultural practices and management, the last ten years have been characterised by slow GHG emissions reduction from the livestock sector.

The EU livestock sector is the world's largest by economic activity, and with 48% of total EU economical agricultural activity, it is a large player in the EU agricultural economy<sup>i</sup>. The livestock sector is characterised, however, by large heterogeneity among the member states, and within production systems, animal productivity, intensity and environmental performance. The heterogeneity is explained *inter alia*, by different biophysical and economic conditions, farming practices, technologies applied, and nutrient use efficiency<sup>ii</sup>. These characteristics along with the economic importance of the livestock sector in EU, the nature of support as well as increased demand for meat and dairy products can both positively and negatively influence the potentials of reducing GHG emissions from the sector<sup>iii</sup>.

**Guiding questions:**

- › In your view, how could EU-level action promote increasing GHG efficiency in the livestock production systems, while allowing for differences in available technology, manure and urea management, stables vs. range kept livestock, swine/sheep/poultry/dairy cattle/meat cattle/etc.?
- › How do we respect the heterogeneity of the sector across the EU while at the same time promote fair competition and growth?
- › What are the main types of barriers for reducing GHGs emissions in the livestock sector in your MS – economic, regulatory, behavioural, knowledge?

## Key policies and regulation

Climate change and agricultural GHG emissions have become an increasing focus of the EU regulation in recent years.

The Nitrate and National Emission Ceilings Directives target the emissions from manure handling and storage as well as stables. None of these directives, however, has a specific climate change mitigation focus, and the NEC also does not focus exclusively on agriculture<sup>iv</sup>.

Under the Common Agricultural Policy (CAP), there are possibilities for regulating the GHG emission from livestock through the Rural Development Program (RDP). The RDP provides a framework for the measures each MS should provide. However, there are some room for the MS to design and focus the operations in each measure as the MS see fit<sup>v</sup>. But as only a few MS have implemented climate actions under the RDP at all, there is large potential to improve climate change mitigation in the livestock sector through the measures of the RDP<sup>vi</sup>.

Legislation, with objectives aimed at reducing emissions in the European livestock systems, includes the **Nitrate Directive**<sup>1</sup> and the EU **National Emission Ceilings (NEC) Directive**<sup>1</sup>. Also, the **Common Agricultural Policy** and the **Effort Sharing Regulation** (under negotiation) are possible tools to incentivize GHG mitigation. Union research and innovation programmes can further support development of techniques and practices that reduce GHG emissions

From a climate policy point of view, livestock and manure emissions are part of the Effort Sharing Decision and counts towards the non-ETS sector target. But, as seen from the Nationally Determined Contributions (NDC's) of the EU MS under the UNFCCC, only a few MS have established a quantitative reduction target for livestock-related emissions. So far, the most often used way forward incentivised by policies is to convert livestock manure to biogas<sup>vii</sup>. The limited policy action is most likely because it is difficult to reduce emissions from enteric fermentation in many livestock production systems without negative effects on productivity. In general, many livestock systems are so optimized that there will be important trade-offs to consider even for small interventions or changes.

Looking towards 2030, Innovation and research are necessary to drive changes in the sector. Innovation can reveal the ideas and technologies that can revolutionise or radically change current production systems at all scales. Recently, the EIP AGRI has focussed on the digital revolution in agriculture, bringing smartphones, drones, digital hubs, Internet of things, and Big Data into the picture. Many of these ideas are still at a very early stage and need further development. The new framework for research after 2020 could be a window of opportunity for funding that can support new ideas.

### Guiding questions:

- > In what way could the CAP support and integrate possibilities for further climate change mitigation in the livestock sector?
- > What are the major technological enablers for radical GHG emission reductions in livestock production that should receive most funding and research attention?

## Opportunities and barriers for climate mitigation

There are possibilities for climate change mitigation in the sector through (further) development of practices, technologies and policies. These practices and policies must, however, take into account that the potentials of each livestock practice and technology option vary with the conditions of the EU livestock sector and production systems, and that there are no size-fits-all solutions. Keeping this in mind, some overall trends and topics might hold potential to change the sector:

1. *Opportunities in technology and data* Internet of Things, Big data, growing scientific knowledge of economic, behavioural and animal processes and possibly Drones, and Remote Sensing for free ranging livestock may offer opportunities for entirely new ways of monitoring GHG emissions and removals at unprecedented level of detail and perhaps with reduced uncertainty and increasing precision. Artificial intelligence and increasing computational power can allow future systems to process huge amounts of data and provide overviews, trend lines and breakdowns as needed. These developments may open up for animal-level monitoring and optimization and therefore also the development farm level incentives and regulation.

2. *Optimizing current systems* Examples of known practices, which reduce GHG emissions from livestock, include increasing the efficiency of the livestock production, through improved manure management and processing, changes in breeding practices, and livestock husbandry improvements. Further, improving animal feed strategies, use of feed additives and feed utilisation can reduce the NH<sub>3</sub> emissions from manure in both housing and storage, for example through phase feed and low protein animal feeding<sup>viii</sup>. Some of the mitigation actions are straightforward to implement, and can be economically beneficial to the farmers. For example, enhanced targeting of fertilisers and manure can increase production and decrease inputs cost, while maximising nitrogen uptake in crops reduces N<sub>2</sub>O emissions<sup>ix</sup>. However, some mitigation actions are challenging and require technological development, innovation and investment in e.g. in livestock housing, or technical advice and training.

### 3. *Behavioural change*

The choices made by consumers and their habits and preferences are essential for the agricultural sector. Behavioural change is a macro-driver that can push farmers to adopt certain climate friendly practices in the production system and thereby lead to reduced emissions. Willingness of consumers to pay a price premium for certified or organic products, their preferences for animal welfare or low impact farming, and the degree to which products or product categories are consumed within the EU or exported are important levers for change in agricultural production systems much exposed to global world markets and competition. None of the mentioned EU policies on soil and land addresses the consumers, and few EU policies do.

#### Guiding questions:

- > How can we incentivize GHG reductions in the livestock sector? In manure management? Through increased use of feed additives or through change in consumers behaviour or preferences?
- > The optimization approach might very well be the most feasible and tangible of the three. However, thinking 30 years ahead, how do you envision EU and MS policies can address the two other?

---

<sup>i</sup> Buckwell et al., (2015). Sustainable livestock production in Europe: A question of food security, climate and innovation. Sustainable Livestock Production in Europe. Available at: [http://www.eaap.org/wp-content/uploads/2015/11/Sustainable\\_livestock\\_A4\\_AW\\_261015\\_LoRes.pdf](http://www.eaap.org/wp-content/uploads/2015/11/Sustainable_livestock_A4_AW_261015_LoRes.pdf)

AnimalChange (2015). Livestock and Climate Change: Animal Change project summary and key policy challenges. Available at:

<http://www.animalchange.eu/Docs/AnimalChange%20summary%20and%20key%20policy%20challenges.pdf>

<sup>ii</sup> Lesschen, J. P., Van den Berg, M., Westhoek, H. J., Witzke, H. P., & Oenema, O. (2011). Greenhouse gas emission profiles of European livestock sectors. *Animal Feed Science and Technology*, 166, 16-28. Available at:

<http://www.sciencedirect.com/science/article/pii/S0377840111001775>

EC (European Commission) (2017a). Agricultural production – animals. Available at: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural\\_production\\_-\\_animals](http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_production_-_animals)

<sup>iii</sup> IEEP (2017a). Research for AGRI Committee - The Consequences of Climate Change for EU Agriculture. Follow-up to the COP21 - UN Paris Climate Change Conference, Directorate-General for Internal Policies, Policy Department B: Structural and Cohesion Policies, Agriculture and Rural Development, European Union 2017.

- EUROSTAT (2017) Agriculture - greenhouse gas emission statistics, available at: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Agriculture\\_-\\_greenhouse\\_gas\\_emission\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Agriculture_-_greenhouse_gas_emission_statistics)

<sup>iv</sup> Agra Europe (2017). World Livestock Industry and Climate Change 2017. Agribusiness Intelligence, informa.

- EC (European Commission) (2017b) Reduction of national emissions of atmospheric pollutants

<sup>v</sup> EC (European Commission) (2015) EU agriculture and climate change. Factsheet. Available at:

[https://ec.europa.eu/agriculture/sites/agriculture/files/climate-change/factsheet\\_en.pdf](https://ec.europa.eu/agriculture/sites/agriculture/files/climate-change/factsheet_en.pdf)

<sup>vi</sup> COWI (2016). Mainstreaming of climate action into ESI Funds. Final Report. European Commission DG Climate Action.

Report prepared by: Jespersen, M.S., Sørensen, M.M., Raphaelsen, B., Wessel, R., Wähler, L.C., Olesen, A., Bager, S.L. and Skolina, J. Available at:

[https://ec.europa.eu/clima/sites/clima/files/budget/docs/report\\_mainstreaming\\_of\\_climate\\_action\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/budget/docs/report_mainstreaming_of_climate_action_en.pdf).

<sup>vii</sup> EC (European Commission) (2017c) [https://ec.europa.eu/clima/policies/effort\\_en](https://ec.europa.eu/clima/policies/effort_en)

<sup>viii</sup> Agra Europe (2017). World Livestock Industry and Climate Change 2017. Agribusiness Intelligence, informa

- IEEP (2017b). Towards an integrated approach to livestock farming, sustainable diets and the environment: challenges for the Common Agricultural Policy and the UK. A report for Eating Better. Available at: <https://ieep.eu/news/agriculture-and-land-management/agriculture-has-a-unique-role-to-play-in-the-eu-s-efforts-on-climate>

- EC (European Commission) (2017d). Agri-environmental indicators – livestock patterns. Available at:

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental\\_indicator\\_-\\_livestock\\_patterns#Context](http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_livestock_patterns#Context)

<sup>ix</sup> IEEP (2017b). Towards an integrated approach to livestock farming, sustainable diets and the environment: challenges for the Common Agricultural Policy and the UK. A report for Eating Better. Available at: <https://ieep.eu/news/agriculture-and-land-management/agriculture-has-a-unique-role-to-play-in-the-eu-s-efforts-on-climate>