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task  
force**

A European Public-Private Partnership



Photo credit: Volker Hartmann/Getty Images

**12<sup>th</sup> Seminar of the Animal Task Force**  
**November 17<sup>th</sup>, 2022 – 9:00-13:00**  
**University Foundation, Brussels**  
**& Webinar**

**Seminar report**

Table of contents

Welcome and Introduction ..... 3

Outcomes of the ATF-EAAP LFS Symposium, September 5<sup>th</sup>, 2022: Important messages & gaps in the discussion ..... 4

Public policies: vision from policy maker ..... 4

*Policies and research: where do we stand?*..... 5

EU policy tools to decrease emissions from the livestock sector ..... 5

Taking another look at methane ..... 6

Reduction and mitigation measures in New Zealand’s livestock sector ..... 7

*Strategies in practice: input from the field*..... 8

Animals genetics..... 8

Feed additives ..... 8

Accelerating the Uptake of GHG Reduction Measures – The Youth Dimension..... 9

Dairy industry: use of an additive to reduce enteric methane ..... 10

Panel discussion with speakers and the audience ..... 11

Take away messages and closing ..... 12

## Background

Greenhouse gas (GHG) emissions are among the greatest challenges faced by livestock farming and it has become an issue of the greatest importance for consumers and policy makers. At the same time, livestock has a strong mitigation potential: *“improved management practices could reduce emissions from livestock systems by about 30%”*, says FAO.

Several reports have been recently published among international organisations (IPCC, FAO, DG Agri) that will influence decision making with impacts on the livestock sector.

The ATF would like to draw a state of the art on GHG emissions from livestock, the role of methane, the different metrics to measure emissions and mitigation levers at various scales, inviting international organisations, research organisations, farmers, industries, NGOs and policy makers.

## Format and aim of the 12<sup>th</sup> ATF Seminar

This seminar was a follow-up to the 2<sup>nd</sup> one-day symposium organised by the Animal Task Force and the EAAP Commission on Livestock Farming Systems, Monday 05<sup>th</sup> September 2022, EAAP Annual Meeting 2022 – Porto, Portugal. As usual, it aimed to engage discussion with farmers, scientists, stakeholders related to the food supply, policymakers and with the general society.

This seminar aimed to contribute to:

- Address how research and innovation can support the livestock sector: needs in R&I to help the livestock sector to adapt to climate change and mitigate emissions;
- Provide input to European research and innovation agendas and to public policies to secure Europe’s role as a leading global provider of safe and healthy animal-derived products;
- Engage a dialogue with various stakeholders;
- Foster ownership by farmers and industries.

## Welcome and Introduction

Frank O’Mara opened the 12<sup>th</sup> ATF seminar and introduced the theme of the discussion and the role of ATF<sup>1</sup>. Over 200 participants from the private sector, research, policy making, civil society and farmers’ organisations were counted in the room and remotely.

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<sup>1</sup> The Animal Task Force (ATF) promotes a sustainable and competitive animal production in Europe. We are a public-private partnership of experts from knowledge institutes and industry representative organisations from across Europe. We work closely together with EAAP on setting the European agenda for research and innovation in the animal domain.

For more information: [www.animaltaskforce.eu](http://www.animaltaskforce.eu) and [@AnimalTaskFrc](https://twitter.com/AnimalTaskFrc)

## Outcomes of the ATF-EAAP LFS Symposium, September 5<sup>th</sup>, 2022: Important messages & gaps in the discussion

By Michael Lee, President of the EAAP Commission on Livestock Farming Systems - [@HarperAdamsUni](https://www.harper-adams.ac.uk) <http://www.harper-adams.ac.uk> [@EAAPofficial](https://twitter.com/EAAPofficial) <http://www.eaap.org>



*Prof. Michael Lee is an expert in sustainable livestock systems, defining their role in securing global food security at the same time as protecting environmental health (Livestock's role in human and planetary health). Since November 2020, Michael is Deputy Vice Chancellor of Harper Adams University, England's Premier specialist agriculture and land use University. He has published over 300 research articles and papers including articles in Nature and Science. He was awarded the Sir John Hammond Memorial Prize in 2015 for services to Animal Science. In August 2019, he was elected President of the European Federation of Animal Science Livestock Farming Systems Commission. In April 2021 he was elected President of the British Society of Animal Science becoming Past President in April 2022.*

To set the scene, Michael Lee presented the outcomes of the 2<sup>nd</sup> one-day symposium of the ATF and EAAP Commission on Livestock Farming Systems that took place on September 05<sup>th</sup>, 2022, during the EAAP annual congress in Porto, Portugal.

Currently, agriculture makes a substantial contribution to the total non-CO<sub>2</sub> GHG emissions (around 47%), while methane is the dominant agricultural gas. Globally, agricultural emissions from non-CO<sub>2</sub> continue to rise (1990- 1999: 5.2±1.4 to 2010- 2019: 6±1.6 GtCO<sub>2</sub>e).

The biggest challenge and driver of agriculture emissions is population growth and growing consumption in Africa and Asia, leading to efficiency improvements being offset by increased production. Sustainable intensification has the potential to reduce emissions by 1.7 GtCO<sub>2</sub>e per year but would only work with a reduction in total number of animals. At the same time, a reduction in food loss and waste could represent a reduction of emissions by 2.1 GtCO<sub>2</sub>e per year. Methane is considered as being the second largest contributor to global warming, resulting from increasing atmospheric concentration and its warming contribution, therefore we need to balance emissions and total sinks.

The climate law enshrined into EU legislation the goal to be climate-neutral by 2050 (55% reduction by 2030). To achieve climate neutrality and, thereafter negative emissions, the EU needs to increase carbon removal and establish sustainable carbon cycles. Some of the promising mitigation practices in the EU are: breeding, improved animal diet, valorisation of health, manure management, more sustainable diets, and feed additives to reduce methane from enteric fermentation. Breeding is one of the practices that can currently bring more cumulative profit and reduction of GHGs simultaneously.

[More information in the slideshow](#)

## Public policies: vision from policy maker

By Colm Markey, Member of the European Parliament - Committee on Agriculture and Rural Development [@ColmMarkey](https://twitter.com/ColmMarkey) <https://colmmarkey.com/>



*Colm Markey is a Member of the European Parliament representing the constituency of Midlands North-West. He serves as a Member on the Agriculture and Rural Development Committee and the Special Committee on Animal Transport. Colm is a substitute member of the Transport and Tourism Committee, the Fisheries Committee and the EU-UK Parliamentary Partnership Assembly. Colm runs the family farm in Togher, County Louth. He has been a public representative for over a decade. Colm was first elected to Louth County Council in 2009 as a councillor for the Mid-Louth area and was elected as Cathaoirleach of Louth County Council for 2017-18. Colm is a former chairperson of the Louth Leader partnership. He is also a former national president of Macra Na Feirme (2005-2007).*

MEP Markey stressed the focus that the Agriculture Committee of the European Parliament is putting on the intersection between environmental policy and agriculture and the many challenges of developing a sustainable agricultural model for the future. He also pointed to the many challenges to food security and the need for a greater supply of protein for human consumption. There is also a focus on the ambitious targets being set by different EU policies and the need for ever more science and research to find sustainable solutions and validate the true impact of different farming practices. There is an interplay between energy, food security, the environment, and health that needs to be explored and incentivised by the Common Agriculture Policy (CAP). Nevertheless, the CAP is not enough, and we need to look at other funding mechanisms to support farmers on their sustainability journey, like for example, carbon farming.

The role of research is incredibly important, in shaping public opinion. People need to understand the importance of food production and the vital role animals play in providing a sustainable supply of humanly digestible protein. Policymakers need the science to combat the misconceptions of those who think that to protect the environment you need to be against livestock.

There is also the need to ensure that science finds the solutions to our many challenges, verifies the true environmental accounting figures of the various production systems and shows a sustainable pathway forward that farmers and the general public can have confidence in.

### **Questions & answers:**

*Is there any common ground between the two groups, the anti- and pro-livestock and environment?*

- ⇒ Not currently. Most of the anti-livestock side claims any research on the positives of livestock is simply greenwashing and is unwilling to accept it.

## *Policies and research: where do we stand?*

### **EU policy tools to decrease emissions from the livestock sector**

*By Valeria Forlin, DG Clima, Unit C3: Low Carbon Solutions (III): Land Economy & Carbon Removals @EUClimateAction*

[https://ec.europa.eu/info/departments/climate-action\\_en](https://ec.europa.eu/info/departments/climate-action_en)



*Valeria Forlin holds a PhD in Economics from the Catholic University of Louvain-la-Neuve (BE). She has been working at the European Commission since 2016, focusing on the interplay between climate policies and the agriculture and food sectors.*

Valeria Forlin presented the EU climate policy framework towards climate neutrality.

The Climate Law enshrines into legislation the EU objective to become climate-neutral by 2050. In July 2021, the Commission adopted a set of proposals to make the EU's climate, energy, land use, transport, and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 - called the 'Fit for 55' Package. Under this package, two pieces of legislation are particularly relevant for the livestock sector: the effort sharing regulation and land use, land use change and forestry (LULUCF) regulation. Through this, the Commission is hoping to increase the EU carbon removals to at least 310 Mt by 2030.

Another key element is the proposal on the Certification of Carbon Removals. To achieve climate neutrality at the latest by 2050 and negative emissions thereafter, the EU needs to increase carbon removals and establish sustainable carbon cycles. For this, the EC is working on defining quality criteria and certification rules to enable carbon farming – a green business model rewarding land managers for

improved land management practices, resulting in carbon sequestration in ecosystems and reducing the release of carbon to the atmosphere.

As part of this process, the EC is also assessing the potential to apply the polluter-pays principle to emissions from agricultural activities, and reward farmers for long-term carbon removals. This study started in September 2022 and will help prepare the regulatory framework for the certification of carbon removals.

### **Questions & answers:**

*Shall we tax emitters or pay to remove carbon from the atmosphere? Should we tax methane and/or GHG? Who is the polluter: the farmer or the company?*

⇒ These are the answers the study will provide.

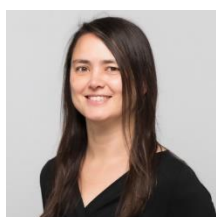
*How will farmers be aided? Any initiative to engage with the public on carbon farming? Why not the same polluter-pay principle for transport?*

⇒ Certificates of quality can be used to get money in many different ways. Once trust is built, income opportunities will be very diverse. Applying carbon pricing to the transport sector is already part of the 'Fit for 55' proposals.

[More information in the slideshow](#)

## **Taking another look at methane**

**By Michelle Cain, Cranfield Environment Centre** [@civiltalker](#) [@CranfieldUni](#)  
<https://www.cranfield.ac.uk/>



*Michelle Cain is Lecturer in Environmental Data Analytics and UKRI Future Leaders Fellow, Cranfield University. Her current research focuses on the role of greenhouse gases other than carbon dioxide in limiting global warming, consistent with the Paris Agreement's temperature goal. In particular, how much of a role methane and nitrous oxide can play in climate mitigation, for example in agriculture. She is involved in projects to evaluate the impact of mitigation strategies on global warming, including differences between reductions in short- and long-lived emissions. She is co-leader of the UN FAO (United Nations Food and Agriculture Organization) Technical Advisory Group on Methane.*

Michelle Cain presented an in-depth analysis of methane and its emissions.

According to the presentation, cutting methane globally by 30% on 2020 levels by 2030, followed by a slower decline after that lowers global warming caused by methane by approximately 0.1C between 2020 and 2050. Methane emissions do not need to reach 'net zero' to stop adding to global warming in the same way long-lived gases do. If global methane emissions decline at 3% per decade, methane's contribution to global warming remains roughly constant. Currently, global methane emissions are rising and causing additional warming - pushing us closer to 1.5C. Cutting global methane emissions now will slow our path toward higher temperatures in the next few decades. Meanwhile, IPCC says that "every action counts" and that methane cuts provide tangible near-term (co-)benefits.

Regarding metrics to measure methane, each of them captures a different physical or socio-economic effect. Different metrics vary in magnitude for methane as methane is short-lived, so metric choice can make a large difference. CO<sub>2</sub>-warming-equivalent emissions capture the impact on the temperature of a change to methane emissions accurately. If you wish to evaluate impact on temperature (e.g. to incentivise limiting warming), then a metric like GWP\* (there are other metrics which capture the same effect) can be used to calculate CO<sub>2</sub>-warming-equivalent emissions to do this. As with any metric use, responsible usage is recommended.

To pursue and evaluate progress toward a temperature goal, we need to know how activities contribute to global temperature change. Cumulative CO<sub>2</sub>-warming-equivalent emissions do this for short- and long-lived emissions, while standard CO<sub>2</sub>-equivalence only does this for long-lived emissions. At a minimum, short- and long-lived pollutants should be reported/targeted separately to clarify temperature implications (Allen et al., 2022).

The main message is the importance of honesty about every sector's contribution towards climate change and its mitigation so that we can work together towards limiting global warming.

[More information in the slideshow](#)

## Reduction and mitigation measures in New Zealand's livestock sector

By John Roche, New Zealand Ministry for Primary Industries (MPI)

[@MPI NZ](#)

<https://www.mpi.govt.nz/>



*John Roche was appointed Chief Science Adviser to New Zealand's Ministry for Primary Industries in June 2018 to provide independent and strategic science advice to the Director-General and to provide leadership in the wider ministry science areas. He is a member of the Prime Minister's Chief Science Adviser's Science Forum. John leads a number of the Research and Development Accelerators, in partnership with science organisations, farming industry bodies, and iwi Maori. He also Chairs the independent Mycoplasma bovis Strategic Science Advisory Group, set up to help accelerate eradication, and the Early Investment Panel for accelerating mitigation solutions to greenhouse gas emissions from agriculture. He is also an Adjunct Professor in University of Auckland's, School of Biological Sciences and leads interactions between the Ministry and science providers domestically and internationally. In August 2022, John took on the additional role of Director, On Farm Support with the Ministry, to establish an on-the-ground support service for farmers and growers to help them navigate information, investigate opportunities, and access advice.*

Dr John Roche, from the New Zealand Ministry for Primary Industries, presented their plans and progress in reduction and mitigation measures for livestock.

Given the growing global population, we face a challenge of having to produce almost as much protein in the next 30 years, as we did in the last 2,000 years altogether, but, for the first time in human history, we cannot use more land. At the same time, we need to address hunger and malnutrition. New Zealand's greenhouse gas footprint is quite unique, with a large number of ruminant animals and, as a result, 50% of their emissions related to the agricultural sector. Nonetheless, New Zealand's ruminant products have a much lower GHG footprint compared with other international competitors.

Dr Roche also explained how plant and animal-sourced foods are both crucial for sustainable global nutrition, they are complementary not competitors, as the world diet is plant-based but animal-fortified.

To work towards a more sustainable agricultural sector, and reduce their emissions, New Zealand has different targets and approaches to other countries. Measures, like the Climate Change Response (Zero Carbon) Amendment Act 2022, aim to achieve net zero emissions of long-lived gases (carbon dioxide and nitrous oxide) by 2050; and to reduce short lived gases (biogenic methane) to 10% below the 2017 level by 2030, and 24-47% below 2017 levels by 2050. To achieve this, they have recognised the central role of farmers, so their 2022 budget is allocating \$338M to get solutions into the hands of farmers, and to establish the Centre for Climate Action on Agricultural Emissions.

New Zealand is also analysing potential mitigation options for agriculture, their efficacy and availability.

[More information in the slideshow](#)

## Strategies in practice: input from the field

### Animals genetics

By **Nicolas Gengler, University of Liège**

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*Nicolas Gengler is Professor for Numerical Genetics, Genomics and Modelling in the TERRA Research and Teaching Centre of the University of Liège - Gembloux Agro-Bio Tech in Gembloux Belgium. He is the 2019 recipient of the J. L. Lush Award in Animal Breeding of the American Dairy Science Association and is well known for his theoretical and practical work in the field of animal breeding applied to dairy cattle collaborating with many international stakeholders in the field. He has been active in mitigation of emissions and adaptation to climate change, development of functional and welfare traits, and product quality traits. This research is often based on the use of fine milk composition-based proxies using mid-infrared spectrometry. He is an active member of the Functional Trait Working Group of ICAR and contributes to the Research liaison group of Feed and Gas Working Group at ICAR and to the Animal Selection, Genetics & Genomics Network of the Global Research Alliance on Agricultural Greenhouse Gases (Livestock Research Group).*

Nicolas Gengler presented the role of animal genetics in the strategies in practice to decreased emissions.

Genetic improvement is a promising tool, driven through breeding programmes and goals. A breeding goal is a function of the traits to be improved. For this, breeding associations in collaboration with researchers and farmers decide on the direction in which to improve animals. To focus on the reduction of emissions, the genetic improvement needs to be developed through appropriate selection indexes, whilst keeping breeding balanced (as described in [Code EFABAR](#)).

Breeding programmes are composed of different stages and phases. After establishing breeding goals, we start collecting information from animals (phenotypes, relationships and genotypes), which will then lead to breeding value estimation, followed by selection and mating, dissemination and lastly by evaluation of the genetic improvement and genetic diversity. Selection indexes are a crucial part of this process. Selection index is the best (linear) predictor of the breeding goal, a combination of estimated breeding values for many traits, their reliable computation requiring large amounts of data, and, especially for novel traits (e.g. GHG), strong international collaboration.

There are many approaches to mitigate GHG, and genetics has the potential to be an excellent one. But first, there is a need for practical implementation and progress in the field. Also, there is a challenge with international collaboration for the acquisition of GHG data that is also crucial for genomic selection.

[More information in the slideshow](#)

### Feed additives

By **Sinéad Waters, Teagasc & Livestock Research Group of the GRA**

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<https://globalresearchalliance.org/research/livestock/>



*Prof. Sinéad Waters is a Principal Research Officer in the Animal and Bioscience Research Department in Teagasc. She was also appointed Adjunct Professor at the Genetics and Biotechnology Laboratory, Plant and Agri-Biosciences Research Centre, The Ryan Institute, National University of Ireland Galway in 2018. She leads a research programme in the application of genomics technologies to address key issues in agriculture, particularly in the role of the rumen microbiome in improving nutrient utilisation from feed and reducing greenhouse gas emissions, mainly methane, from ruminants and its manipulation via animal breeding and dietary supplementation. She has developed a strong national and*



international research profile and is Principal Investigator or lead Irish partner of many funded projects such as the US-Ireland Tripartite Research Fund, EU FACCE-JPI, ERA-GAS programme, EU Horizon 2020, Science Foundation Ireland and the Department of Agriculture, Food and the Marine Research Stimulus Fund. She is co-chair of the Livestock Research Group of the Global Research Alliance for Agricultural Greenhouse Gas emissions and an active member of the Rumen Microbial Genomics Network and represents Ireland on the Expert group on methane for the EU Commission (DG-AGRI).

Sinéad Waters presented an evaluation of feed additives to reduce methane emissions from ruminants. In Ireland, agriculture is responsible for 37% of GHG emissions, and methane represents 70% of the GHG. In an effort to reduce them, the Irish Government developed the [Climate Action and Low Carbon Development Bill](#) to reduce 25% of agri-emissions by 2030 and to reduce by 10% the ruminant derived methane emissions.

To achieve these targets, Ireland has different strategies like improved management practices, breeding strategies and the one explored in the presentation: feed additives. Feed additives must have: a consistent methane reduction potential, a mechanism of delivery to the animal; no food safety residue implications, and no negative performance effects. At the same time, they must be low cost, ideally have increased performance benefits, be of natural origin, and work in combination with other solutions.

They have identified some promising feed additives, that could help achieve the reduction targets: 3-NOP; a novel oxidizing methane inhibitor that can be delivered in a pellet form. There was limited effectiveness of brown seaweeds. The slow release of feed additives is essential for application at grazing. "GasAbate" is an additive developed for stored manure and slurry which was effective in a pilot study.

[More information in the slideshow](#)

## Accelerating the Uptake of GHG Reduction Measures – The Youth Dimension

By Thomas Duffy, CEJA

[@TaeSavesLives](#)

[@ CEJA](#)

<https://www.ceja.eu/home>



*Thomas Duffy manages together with his parents and sister their 60-hectare farm in North-East Ireland milking 100 dairy cows in a grass-based system. He returned to farming after studying agriculture for 4 years in 'Sustainable Agriculture' degree programme before returning to education to complete an MA in environmental management with a focus on climate change and the livestock sector. Thomas served on the Board of Macra na Feirme for 3 years prior to running for election as President, and 2 years as Agriculture Policy Vice-Chair. He served a term from 2019 to 2021 as President of Macra na Feirme. He is currently one of the Vice Presidents of CEJA, the Council of European Young Farmers.*

Thomas Duffy presented the young farmers dimension to accelerate the uptake of GHG reduction measures.

Thomas described the practices in place at his 100-milking dairy cow grass-based farm. He also detailed the different trade-offs in adopting different measures. Easy wins and simple to reduce or replace measures are, for example: improved utilization of nitrogen via manures, soil pH management, data capture, and others. Smaller changes, with smaller investments needed are, as example: sexed semen, biological nitrogen fixation, precision farming, and more. Lastly, the bigger and costlier changes and investments are: renewable energy, ponds or rewetting organic soils, biomethane/slurry storage upgrades.

The uptake of measures to reduce GHG emissions is also highly affected by the lack of generational renewal, although it is an under researched area, it is known that younger age demographics are more reactive to climate change.

There is a lack of policy consistency, due to the lack of youth dimension in policy and strategy. This leads to missed optimization of financial investments in implementing measures on young farmers farms. The

greater potential return can come from engagement of farmers, but only if generational renewal is ensured.

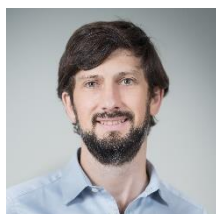
[More information in the slideshow](#)

## Dairy industry: use of an additive to reduce enteric methane

By Simon Bonnet, BEL Group

[@belcorporate](#)

<https://www.groupe-bel.com/en/>



*With a double academic background of agricultural engineer and human nutritionist, Simon Bonnet has always worked to transform the food value chain through the development of healthier and/or more environmentally friendly products, whether through experiences within the innovation, nutrition or marketing departments of different agri-food companies. After more than 10 years with the Bel Group, he has now returned to his first love and is in charge of the transformation towards a more sustainable dairy upstream as Director of Milk Supply for the Bel Group. Its mission is to implement the transformation and transition towards a more sustainable dairy upstream according to the Global Charter co-constructed and co-signed with WWF in 2018. On the 9 dairy basins where Bel operates, his main objective is today to ensure a fair and trustful collaboration with the dairy farmers to ensure the resilience of milk supply while reducing its contribution to climate change.*

Simon Bonnet presented how to use an additive to reduce enteric methane in the dairy industry. Milk is at the heart of the BEL Group decarbonation strategy, where they are aiming to reduce by 50% GHG emissions coming from the farms by 2035.

The emissions factors are clearly identified across the whole supply chain. At the farm level, it represents about 25,000 tons of CH<sub>4</sub> coming from enteric fermentation every year. The first actions to reduce CO<sub>2</sub> emissions are in place, with regenerative agricultural practices and grazing management, but what about enteric methane mitigation? There are many solutions on paper, but very few ready-to-use by the farmers. Consequently, the BEL Group and DSM started a partnership to test the Bovaer® feed additive, leading to trials in Slovakia and France. These trials proved that a roll-out in Europe would mean a reduction of 4,000 tons of CH<sub>4</sub>!

The benefits are the certainty of reduction of emissions, instant reduction, easy to add to the cows ration. While the challenges are around the dose rate of Bovaer® being based on feed quality/ration which can be variable, no benefit beyond methane reduction, and it is a 100% extra-cost to the farmer with no additional advantages.

[More information in the slideshow](#)

## Panel discussion with speakers and the audience

*Moderated by:*

- *Ana Granados, EFFAB-FABRE TP & ATF Vice-President representing the private sector - [@AnaGranadosChap](#)*
- *Ana Sofia Santos, APEZ - FeedInov CoLab & ATF Vice-President representing research providers - [@SofiaSantosAna](#)*

Mr. Wolfgang Burtscher, Director General [DG AGRI](#) – European Commission ([@EUAagri](#)), and Mr. Pablo Manzano, [Basque Centre for Climate Change](#) ([@BC3Research](#)), join the speakers to the panel discussion.

Mr. Wolfgang Burtscher addressed the audience and thanked ATF for the event and invite. Mr. Burtscher shared his appreciation for ATF and its work. The European Commission (EC) official shared the plans of the EC to come up with the framework on sustainable food systems. In this exercise, the EC is receiving inputs from several stakeholders (associations, farmers, NGOs...), and a divergence of ideas and inputs, with some pushing for a reduction of livestock by 50 to 70% %, and to prohibit the promotion of meat. Mr. Burtscher stressed to the audience how fascinating it is to take part in the ATF Seminar, where it is clear the efforts are ongoing to ensure that livestock production can be done in a sustainable way. While livestock produces methane, there are also a lot of positive externalities deriving from it, but how can we ensure we are making it more sustainable? Mr. Burtscher urged researchers, scientists and other stakeholders to inform policymakers and Member States on the technologies that are ready to be deployed, the toolboxes ready to improve the sustainability of the livestock sector. As part of the CAP Strategic Plans, Member States could benefit from these technologies - as there are incentives for sustainable practices, but they need a clearer view on what is ready or not and who is in the lead of rolling it out. If these incentives are not working, there is always the risk that lawmakers have to achieve progress through mandatory legal frameworks.

**Audience:** Why do we always focus on methane? There's a lot of it in the atmosphere, easy to identify from livestock, but from other activities we don't know... Is there a risk that we focus too much on livestock and not on the rest?

**Michelle Cain:** there are very diverse sources, agriculture emissions globally increased, 0.5 degree temperature increase because of methane. We don't need net zero, but to work on a gradual reduction and then it would translate in the other factors.

**Audience:** How effective is science on the debate of sustainable food systems?

**Wolfgang Burtscher:** I rely on science that says methane emissions are risks for our climate and we need to reduce it. Science shows how important it is to decarbonize agriculture. The research results are often in a shelf and the challenge is to ensure their deployment. This is a big challenge for policy making. When it comes to the use of new technologies and the development of new skills, we need sufficient transition and we should not overestimate the speed of change.

**Pablo Manzano:** We have a problem with science, we don't do enough multidisciplinary science. Methane emissions need to be understood also under the lens of ecology. At the Basque Centre for Climate Change (BC3) we are doing very novel research that shows how the amount of methane produce naturally in ecosystems cannot be underestimated (article : "[Underrated past herbivore densities could lead to misoriented sustainability policies](#)"), and that footprint attributed to the most extensive livestock systems would be greatly nuanced (article "[Carbon footprint of transhumant sheep farms: accounting for natural baseline emissions in Mediterranean systems](#)"), accepted at International Journal of Life Cycle Assessment).

**John Roche:** We talk about methane as if it's all the same, but we need to recognise that there is a difference between fossil fuels derived methane, which is releasing carbon dioxide sequestered 100s of millions of years ago, and biogenic methane, which has only recently been formed.

**Michelle Cain:** Fossil methane is slightly higher... if we reduce it gradually, we won't drive global warming.

**Wolfgang Burtscher:** I am open to any science-based discussion and ready to receive related research. Regarding the decision of what is sustainable, lots of trade-offs need to be made regarding different, sometimes contradictory indicators.

## Take away messages and closing

Frank O'Mara, President of ATF, closed the Seminar, by thanking all speakers and participants. The role of livestock is highly contested, but the progress has been enormous.

All the actors are on the same page in terms of agreeing that we need to address the emissions from livestock. Some want to ban it completely, as they consider it the only solution to achieve the Paris Agreement. However, **there are many options to reduce GHG and methane emissions, as demonstrated today: breeding, feed additives, management practices**, and many more explained by our speakers.

How are we going to implement these solutions and technologies? It is clear that we need multi-actor and multidisciplinary approaches and research. Support for farmers to adopt technologies is going to be critical for progress and ATF is developing a policy brief on the topic.

All presentations are available on the [ATF website](#).