Food and Agriculture Organization of the United Nations

Technical Advisory Group (TAG) on Methane

Terms of reference

BACKGROUND

The livestock sector is a contributor to global human-induced greenhouse gases (GHG) emissions. Major GHGs from feed and livestock production include: methane (CH_4), carbon dioxide (CO_2), and nitrous oxide (N_2O). These three molecules are generally classified as either short- or long-lived depending on their duration in the atmosphere. In contrast to CO_2, CH_4 is a stronger greenhouse gas due to its enhanced ability to trap heat. However, while most of CO_2 persist in the atmosphere for centuries, the CH_4 life span in atmosphere is instead about 12 years. As far as CH_4 emissions from ruminants systems are concerned, their cycle starts from the feed crops farming that transform CO_2 into oxygen and carbohydrates through photosynthesis of plants. Further to feed ingestion, bacteria in the rumen start the digestion during which carbohydrates in feeds are also transformed into CH_4. Methane is hence released in the air during digestion (enteric fermentation) and manure management. Within 12 years in the atmosphere, methane is broken down, and the carbon converted into CO_2 through oxidation.

The metrics normally used for GHG emission assessments estimate their impact on global warming or climate change associated to emissions over a specific time period.

The guidelines by the Livestock Environmental Assessment and Performance (FAO LEAP) Partnership were primarily developed in support of baseline assessments and environmental performance tracking of livestock supply chains. Even if GHG emission types are discussed in the LEAP guidelines on livestock production, no recommendation is provided to classify methane and other GHG emissions depending on their source (biogenic vs non-biogenic emissions) at the life cycle inventory stage. Likewise, no separate reporting is recommended for the impact assessment. GWP-100 is the indicator recommended to assess the impact of GHGs.

A new Technical Advisory Group will be formed in order to better inform GHG assessments instrumental to mitigation strategies and comparisons between sectors (e.g. livestock vs air transport) and products (e.g. textile from livestock production vs synthetic materials).

AIMS OF THE ACTIVITY

The FAO LEAP partners called for a technical revision of the LEAP guidance on classification and impact assessment of methane.

Some of the questions the TAG will answer include:

- Is it appropriate classifying and assessing GHGs depending on their source (biogenic vs. fossil)? What is the overall carbon balance of rice production? What is the overall carbon balance of a livestock production system?
- What are key features and limitations of GWPs, GWP* and GTP indicators to assess the impact of biogenic emissions on climate change? What signals do the different metrics give to decision makers in relation to GHG emissions mitigation strategies? Which metric to use for comparative GHG emission assessments?
- Is it enough distinguishing GHG emissions from their source to compare the carbon footprint of the sectors of bio-economy with those outside it? How to inform about use of non-renewable resources (e.g. fossils)?

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The TAG will start by illustrating how feed and livestock production interact with the environment through both emissions of methane and other GHGs, and carbon removals. The TAG will then analyze the major metrics used for GHG assessments (GWPs, GWP* and GTP) to see what the strengths and weaknesses of different metrics in supporting sound decision making on GHG mitigation strategies and sectoral carbon footprints. The TAG will conduct an illustrative case study modelling livestock production impacts and scenario analyses making use of different indicators. The TAG will finally revisit the FAO LEAP recommendations on metrics to assess GHG emissions and use of fossil resources.

DELIVERABLES

- Review paper for publication in open-access scientific journal ensuring rapid publication
- Technical report with recommendations and reasoning

ROLE AND ENGAGEMENT

TAG members are invited to actively participate in four virtual meetings. Each meeting will last up to two days. In addition to participation in the meetings, TAG members are expected to continue to work on TAG deliverables under the overall guidance of the TAG chair to deliver quality technical products on schedule. Active participation in TAG activities also guarantees co-authorship of the technical products. TAG members report to the TAG chair. LEAP will not grant any honorarium to TAG members.

Minimum requirements include:

- Working knowledge of English.
- Skilled in team working and hence in sharing views and knowledge in a constructive manner.
- Highly-motivated and committed to develop sound tools enabling to support transparent decision making at various scales and in all regions worldwide.
- Respect of cultural and scientific diversity of TAG members.

QUALIFICATIONS

TAG members are technical experts having a strong background in one or more of the following subjects: plant science, animal science, life cycle assessment, livestock production systems, soil science, climate science, ecology, environmental chemistry. Ideally, TAG members have a track record in research proven through peer-reviewed publications.

JOINING FORCES WITH OTHER INITIATIVES

FAO LEAP is going to team with The Global Research Alliance, the Global Alliance for Climate-Smart Agriculture, the Life Cycle Initiative, and the Global Soil Partnership for this guideline development.
As action network of the he Global Agenda for Sustainable Livestock (GASL), FAO LEAP will also seek for input from the GASL academia cluster.

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TIMELINE

TAG formation	1st meeting	2nd meeting	Paper submitted for publication	3rd meeting	Draft technical report for review	4th meeting	Release of the Technical Report
October-November 2020	November 2020	December 2020	December 2020	February 2021	March –April 2021	May 2021	August 2021

APPLICATION

Candidates are kindly requested to submit their CVs to the LEAP Secretariat (Livestock-Partnership@fao.org) by 28th October 2020. CVs must include an updated list of publications and work experiences. All applications will be reviewed by the LEAP Secretariat. Merit and gender balance are two key selection criteria.

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