



Food and Agriculture Organization
of the United Nations

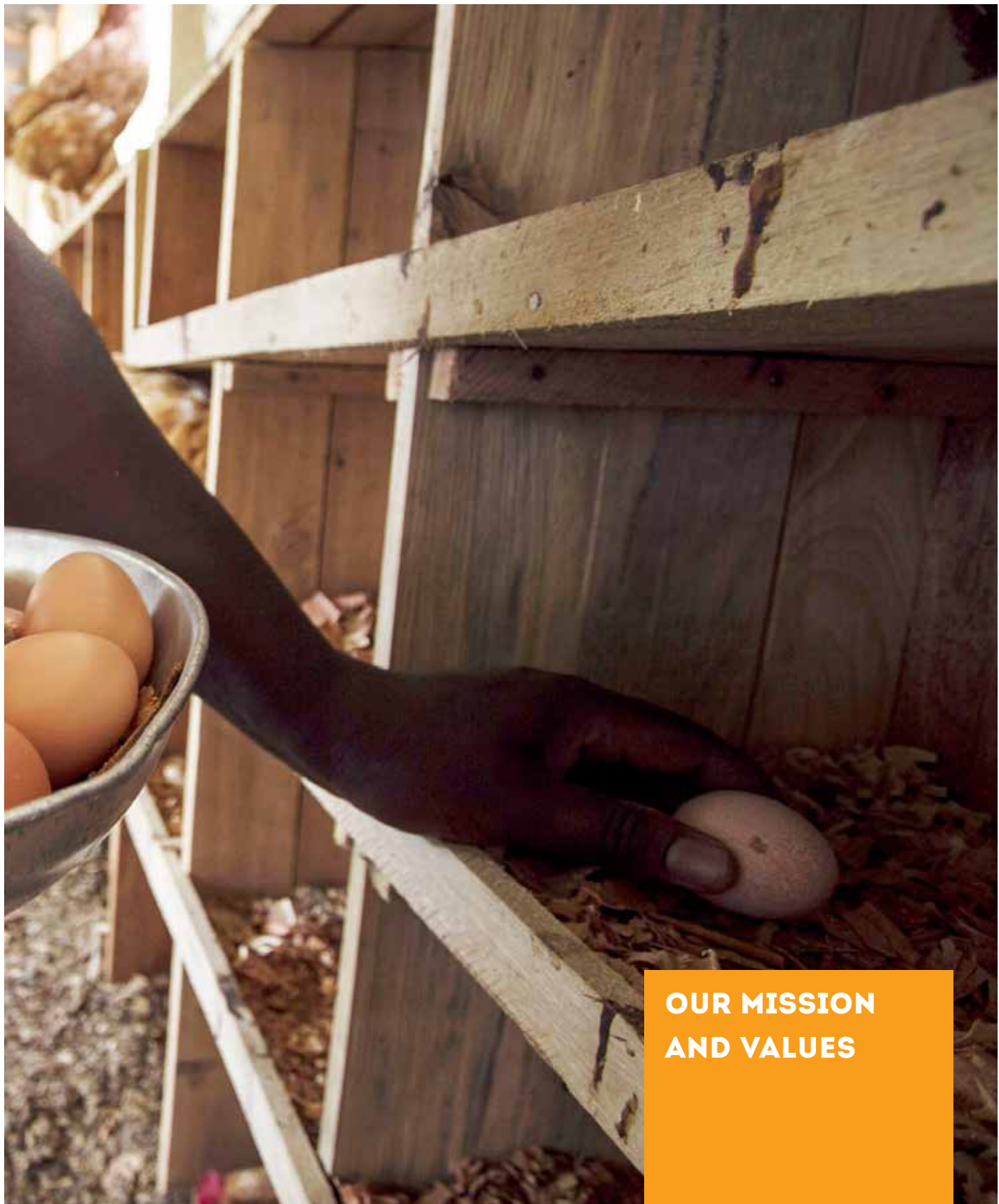
LEAP AT A GLANCE

2016–2017



**LIVESTOCK
ENVIRONMENTAL
ASSESSMENT
AND
PERFORMANCE
(LEAP)
PARTNERSHIP**





**OUR MISSION
AND VALUES**

The **Livestock Environmental Assessment and Performance (LEAP) Partnership** is a multi-stakeholder partnership of Governments, Private Sector, NGOs and CSOs, and other stakeholders united by a shared commitment to the environmental management and sustainable development of the livestock sector.

LEAP works with its partners around the world to build credible, effective and robust accounting methods and metrics that serve as a foundation to address the sustainability challenges faced by the livestock sector.

We focus on six urgent global challenges that must be addressed: climate, water, nutrient use efficiency, and biodiversity.

OUR APPROACH

Focus on Results: We organize all our work to produce harmonized guidelines and indicators for the assessment of the environmental performance of livestock supply chains.

Analytical Excellence: We leverage global expertise to offer tools that can support benchmarking and improvements in the sector.

Partnerships: We work with scientists and academia, governments, businesses, non-governmental organizations, and international institutions worldwide to create incentives for change.

Communication: We foster change by disseminating our tools, ideas and solutions to targeted audiences.



Our **mission** is to support the transition towards more sustainable food and agriculture by improving the environmental performance of livestock supply chains while ensuring social and economic viability.

Our **goal** is to build global consensus on science-based methodology, indicators and databases for understanding the environmental performance of livestock supply chains in order to shape evidence-based policy measures and business strategies.

The LEAP guidelines represent a coordinated cross-sectoral and international effort to harmonize environmental assessment approaches.

RATIONALE

As the question of sustainability of future food systems takes root, there is a growing recognition of the need for standardized metrics and indicators for monitoring and assessing performance and progress towards sustainability.

Farmers, consumers and other livestock stakeholders are increasingly interested in more information on the environmental performance and sustainability of livestock supply chains. Although a wide range of environmental assessment methods exist, there is a need for comparative and standardized indicators in order to shift the dialogue with stakeholders from methodological issues to improvement measures.

The scope of LEAP is not to propose new standards but to produce detailed guidelines that are specifically relevant to the livestock sector. These methodological guidelines introduce a harmonized approach for the assessment of the environmental performance of livestock supply chains accounting for the specific character of the many production systems involved.



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THE LEAP PROCESS

The LEAP Partnership addresses the urgent need for a coordinated approach to developing clear guidelines for environmental performance assessment based on international best practices. Three groups contributed to their development: the **LEAP Steering Committee**, the **LEAP Secretariat** and **ad hoc Technical Advisory Groups (TAGs)**.

The LEAP Steering Committee, composed of private sector, governments and civil society/non-governmental organizations each with an equal say in defining work plans, provides overall guidance for the activities of the Partnership and helps review and clear the guidelines for public release.

The LEAP Secretariat, hosted at the Food and Agriculture Organization (FAO) of the United Nations, coordinates and facilitates the work of the TAGs, guides and contributes to content development and ensures coherence among the various guidelines.

Each **Technical Advisory Group (TAG)** works to reach consensus on the technical content and prepares a draft guidance. The role of each TAG is to:

- review existing methodologies and guidelines for the assessment of environmental impacts from sector specific supply chains and identify gaps and priorities for further work;
- develop methodologies and sector specific guidelines for the Life Cycle Assessment (LCA) and complementary approaches for assessing resource efficiency and biodiversity from cradle-to-primary processing of animal products; and provide guidance on future work needed to improve the guidelines and encourage greater uptake.

Each of the draft documents is reviewed by the Steering Committee and three external, independent technical experts. The TAG incorporates or rebuts these reviews, and then the guidance document is made available for public comment.

Ultimately, the public comments are adopted or rebutted and the final version made publicly available. LEAP technical outputs are living deliverables, which are subject to changes and improvement as soon as new science becomes available, testing demonstrate methodological issues, and new partners join LEAP bringing new perspectives.



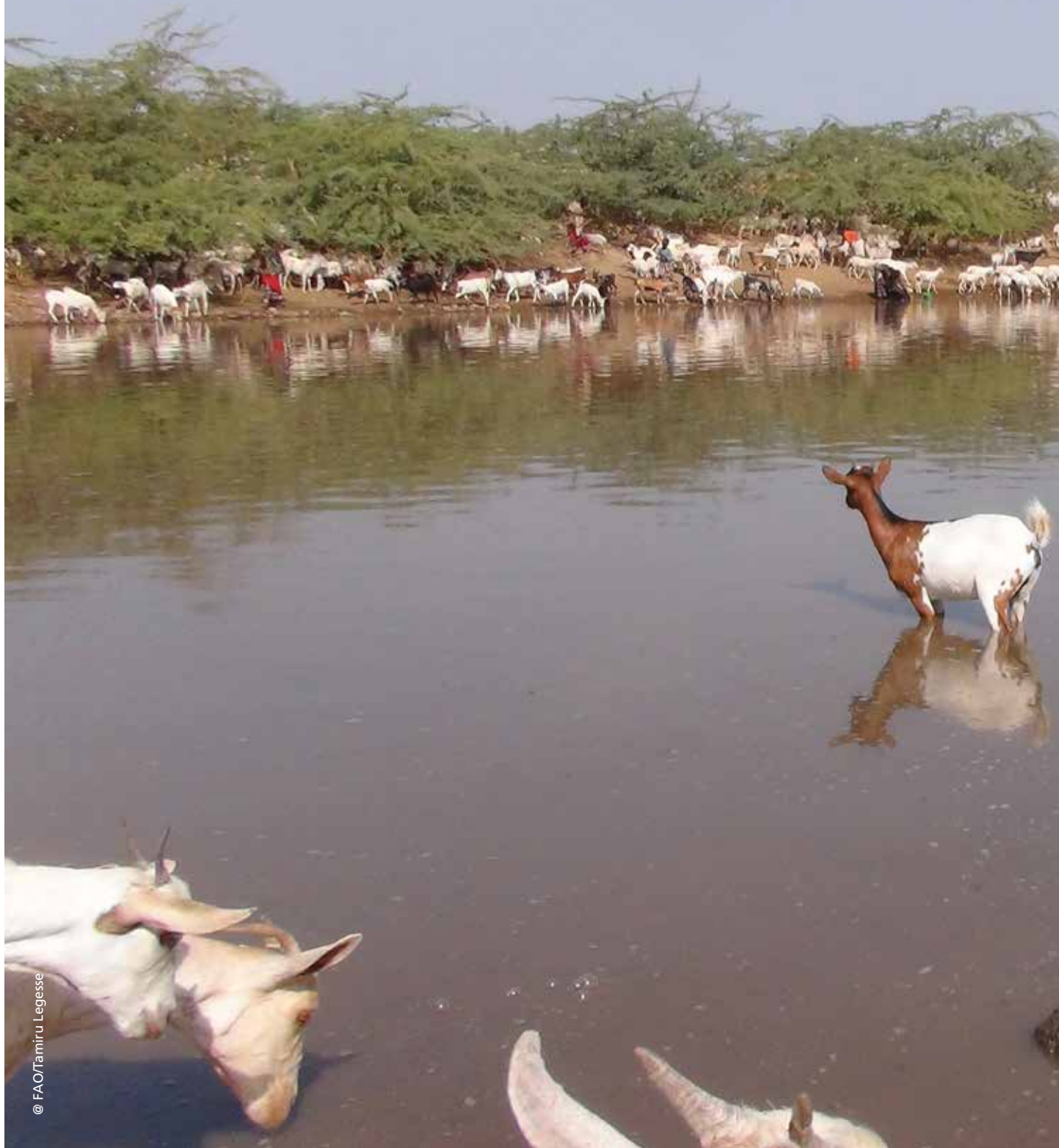
INTENDED USERS

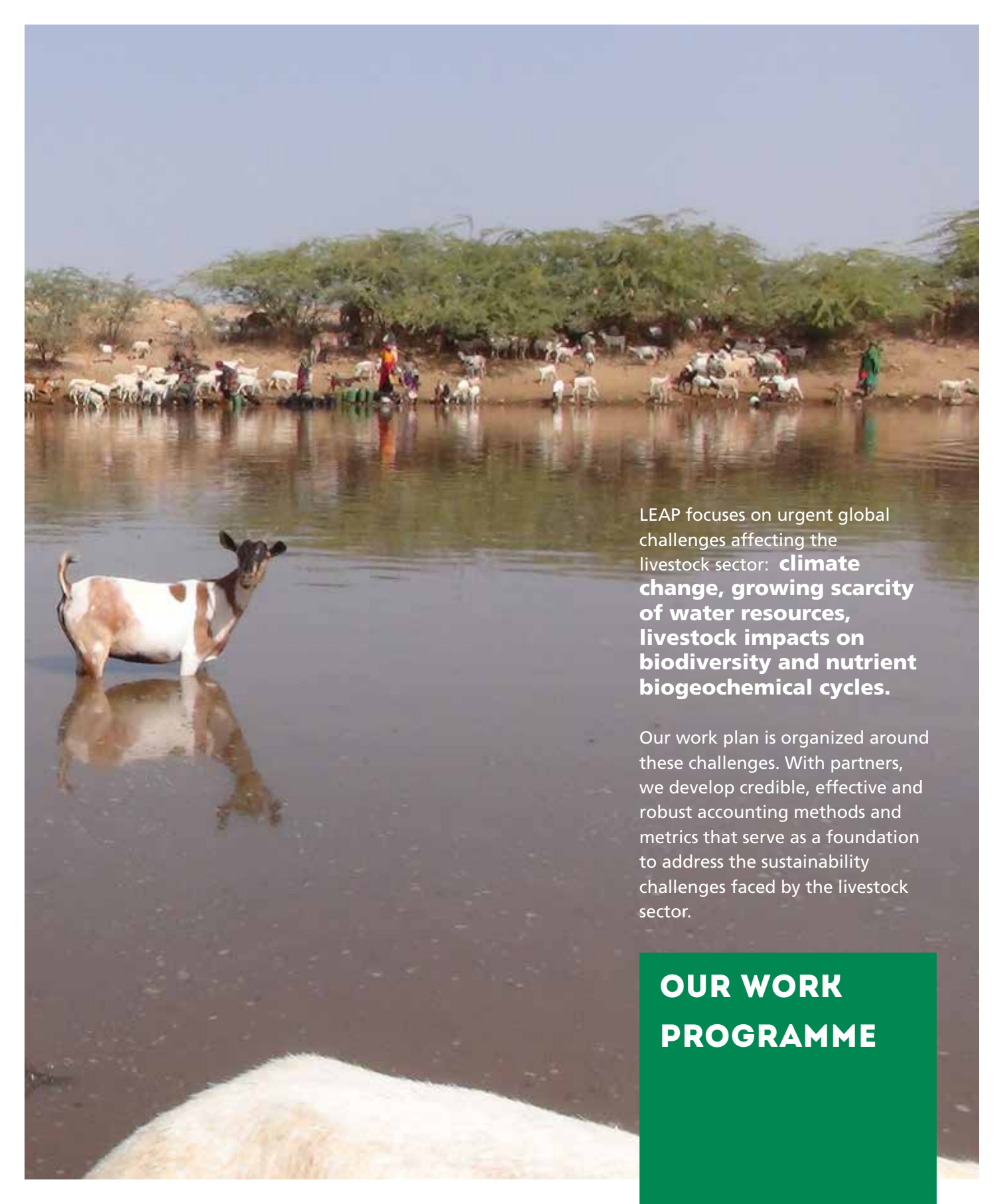
LEAP methodology and guidance documents can be used by stakeholders in all countries and across the entire range of production systems. In developing the guidelines, it was assumed that the primary users will be individuals or organizations with a good working knowledge of LCA or other environmental assessment methods. The guidelines are relevant to a wide range of livestock stakeholders including:

- livestock producers who wish to develop inventories of their on-farm resources and assess the performance of their production systems;
- supply chain partners, such as feed producers, farmers and processors, seeking a better understanding of the environmental performance of products in their production processes; and
- policy makers interested in developing accounting and reporting specifications for livestock supply chains.

Life-cycle thinking is a fundamental concept underpinning LEAP's work. It is an approach to development of guidance to measure environmental performance means that all inputs and outputs across the life-cycle stage of investigation are taken into account. Life-cycle thinking also avoids burden shifting – where impacts could be shifted to other parts of the product life-cycle in order to minimize the impact somewhere else.







LEAP focuses on urgent global challenges affecting the livestock sector: **climate change, growing scarcity of water resources, livestock impacts on biodiversity and nutrient biogeochemical cycles.**

Our work plan is organized around these challenges. With partners, we develop credible, effective and robust accounting methods and metrics that serve as a foundation to address the sustainability challenges faced by the livestock sector.

OUR WORK PROGRAMME

CLIMATE

For years, the livestock sector seeking to curb its greenhouse gas emissions have faced an obstacle - the lack of a harmonized way of accounting for the amount of GHG emissions from livestock value chains or over the whole life cycle of a specific product. This growing recognition of the need for comparative and standardized indicators to assess the sector's performance and progress towards sustainability has led to the development of sector-specific guidelines on GHG emissions.

To date, five GHG guidelines have developed by the LEAP Partnership in a multi-stakeholder collaborative process. The guidelines provide guidance for the accounting and reporting of GHG emissions.

In essence, the guidelines recognize that the sector can't manage what they can't measure. Putting reliable numbers on the table, however, will help focus on the important discussion: reducing emissions and improving the environmental performance of livestock supply chains.

That's one reason the guidelines are already gaining traction around the world. For example, the European Commission's Product Environmental Footprinting, are using the LEAP guidelines as a basis to develop regional specific accounting methods to measure environmental performance.

In addition, LEAP partners from the private sector such as the International Dairy Federation (IDF) and International Feed Industry Federation (IFIF) have sought alignment with the LEAP guidelines as they develop their carbon footprinting methodology and an international database on GHG emissions associated with feed products, respectively.

BIODIVERSITY

Biodiversity – the variety of life on the planet – is essential for human well-being. However, ever greater pressure on this most precious natural resource means that we now find ourselves at a turning point, where we risk losing many of the vital services we depend upon. The loss of biodiversity is one of the most critical current environmental problems, threatening valuable ecosystem services and human well-being. Our Planet is now in the sixth mass extinction of plants and animals. Conserving biodiversity is not just about protecting species and habitats for their own sake. It is also about maintaining nature's capacity to deliver the goods and services that we all need, and whose loss comes at a high price. Biodiversity is also linked to ecosystem resilience yet understanding of these linkages is still in its infancy.

LEAP provides cutting-edge tools to identify and minimize the growing risks to biodiversity and help guide management decisions, support priority setting, and bolster incentives for better biodiversity resource management. Our goal is to create a methodology and indicators that works for all countries.

WATER

Water is the ultimate challenge. It is the unique resource that is key to almost all drivers of growth – be it food production, energy generation, and industry. A decision to allocate more water to energy, food, or industry, is an implicit decision that less water will be available for other economic uses, human consumption, and protection of the environment. In recent years, concerns over growing water scarcity, lack of access to water to meet basic human needs, degraded ecosystem functions, and the implications of climate change on the hydrologic cycle have brought water to the forefront as a strategic concern. The ability to measure and account for water use and wastewater discharges throughout the value chain is a critical component in resource management.

Building on existing standards and methods, LEAP responds to these challenges by focusing on building global consensus on the general topic of water footprinting of livestock supply chains.

NUTRIENT USE EFFICIENCY

While Nitrogen and phosphorus are essential nutrients for all life, the Earth is unable to cope with excessive amounts. The biogeochemical flows is the planetary boundaries that has been most critically over stepped. Livestock have a large impact on nutrient cycles, with repercussions on environmental and public health issues. Up to about 90% of the original nitrogen and phosphorus fed to livestock is excreted in manure, which can negatively impact on the environment.

The use of nutrients such as nitrogen (N) and phosphorus (P) in agricultural systems has contributed to a tremendous growth of crop and livestock production. Nutrient consumption is forecast to increase in coming years, fueled by the population growth, urbanisation, rising incomes, policies, technology and high demand for livestock products.

Nutrient losses to the environment are inherent to these biogeochemical cycles, for example, through leaching and runoff from fertilized soils and manure storage; soil erosion, or emissions to the atmosphere, such as ammonia. These losses potentially threaten water, soil and air quality, but also climate, biodiversity and human health. These losses also relate to the use of fossil resources, such as fossil fuel and P rock. Achieving better nutrient management is thus an important aspect of improving environmental performance in the livestock sector.

Designing interventions for better environmental sustainability requires indicators adapted to the increasingly long and complex supply chains. Nutrient use efficiency is a well know approach to benchmark nutrient management at the animal level, and to some extent at the farm level. LEAP addresses this challenge by building consensus on measuring nutrient dynamics in livestock supply chains.

PARTNERING FOR CHANGE


The complexity and interconnectedness of the challenges faced by the livestock sector call for a new way of doing business, requiring all actors to engage and share knowledge in supporting countries and livestock industry to implement and monitor the SDGs.

Cultivating strategic linkages is a mainstream practice of the LEAP partnership. We are involved in a wide range of initiatives such as with other initiatives with similar goals undertaking related work programmes such as the *UNEP SETAC Life Cycle Initiative*, the *European Commission's Environmental Footprinting Initiative*, the *Global Soil Partnership*.

Feed industry partners with LEAP

The Feed Industry has established a formal partnership with LEAP to develop a global feed LCA tool and standard: The Global Feed LCA Database (GLFI) for assessing and benchmarking the environmental impact of the feed industry. The Partnership will ensure that the deliverables of the GLFI are compliant with the LEAP methodological requirements as laid out in the LEAP feed Guidelines.



A close-up photograph of a young girl with dark skin and hair styled in braids. A pink fabric flower is tucked into her hair on the left side. She is wearing a light blue patterned top. The background is softly blurred, showing what appears to be an indoor setting with other people.

In 2016-2017, we broadened the scope of LEAP, continued to develop metrics and indicators to measure and monitor the environmental performance of the sector, and reinforced LEAP's role as a springboard to action.

OUR STORIES

Livestock can be part of the solution to climate change

There is unprecedented, international support to address climate change. **The Paris Agreement** – a global and legally binding agreement to reduce greenhouse gases (GHG) emissions to limit global warming to well below 2°C is now in force. The **Sustainable Development Goals** provide clear 2030 goals on a range of environmental and social issues – including **Goal 13** which is an explicit requirement to combat climate change. LEAP leverages its global platform and convening power to help spur greater and faster action. In doing so, it aims to bolster efforts by stakeholders to address the challenge of climate change.



LEAP EQUIPS COUNTRIES AND STAKEHOLDERS TO MEET INTERNATIONAL TARGETS ON CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT GOALS

Recent global developments favor bold climate action from countries. As part of the Paris process, countries committed to implement their Nationally Determined Contributions (NDCs), which outline their actions on climate action. In 2015, the world also committed to the Sustainable Development Goals. The priority in the next few years is to focus on accelerated implementation.

Livestock can be part of the solution to climate change. As part of their contribution to the Paris Agreement, **92 developing countries** have included livestock-related emissions in the scope of their NDCs. The challenge is now to ensure governments, business, and civil society work together to deliver on the existing commitments. All these commitments point to an increasing global demand for climate change action and a mandate and opportunity for the LEAP partnership to support countries and livestock sector in meeting these objectives, in partnership with others. LEAP will continue to develop and mainstream metrics and indicators to measure the outcomes of countries efforts towards addressing climate change.

On the Horizon: Since the Paris Agreement, there is renewed interest in **soil carbon sequestration** in agriculture (e.g. 4 per 1000 initiative) but we still have little understanding of the potential and options in global grasslands but also limited consensus on the measurement approaches. In 2017, LEAP initiated a TAG to draft guidelines for assessing soil organic stock changes in rangelands and grasslands. The draft guidelines will be available at the end of 2017.



Up to 30% of ice-free land on Earth are used for pastures and feed crops.



NEW TAG TO DEVELOP A TOOLBOX OF KEY BIODIVERSITY INDICATORS

Livestock is among the sectors with highest impacts on biodiversity. **Up to 30% of ice-free land on Earth are used for pastures and feed crops**, which results in modifications of biodiversity habitats. In addition livestock production contributes to climate change and pollution (e.g. nutrients, ecotoxic substances) having in turn an impact on biodiversity. **Livestock can also have a positive impact on biodiversity.** For instance, extensive livestock production is only way to maintain semi-natural grassland habitats hosting a unique pool of wild species and providing key ecosystem services.

The impacts on biodiversity, whether they are positive or negative, are highly context dependent and therefore assessment methods need to be relevant to a variety of ecosystems and livestock production systems.

Success story – In 2015, LEAP developed **Key principles for the assessment of livestock impacts on biodiversity.** The Principles recognize the complexity and multivariate nature of biodiversity. As a consequence assessments should:

- clearly state their objectives, conduct a scoping analysis and engage with stakeholders to identify key biodiversity issues (e.g. threatened species/ecosystems or other designation frameworks) in the context of the system under study.
- reflect the range of beneficial as well as detrimental impacts of livestock systems.
- consider on-farm as well as off-farm impacts on biodiversity should also be included, as those arising from the cultivation of imported feed.

These Principles have formed the basis of **The Guide on Biodiversity for the Dairy Sector** developed by International Dairy Foundation.

On the Horizon – To be fully integrated along with other environmental criteria, there is a need to move from principles to quantitative and operational biodiversity assessment methods. In 2017-2018, LEAP will develop a toolbox of key biodiversity indicators, relevant to a range of assessment objectives, users, scales, geographical regions, livestock species and production systems. The toolbox of key biodiversity indicators could be used in combination with other LEAP guidelines to achieve comprehensive assessments of the environmental sustainability of livestock supply chains. This toolbox will support monitoring and progress towards SDG 15 (life on land) and Aichi Biodiversity Targets.

About 75% of nitrogen applied to crops ends up in feed for animals.

Only 20% of this is captured in edible human products.

BUILDING SCIENTIFIC CONSENSUS ON THE ASSESSMENT OF NUTRIENT FLOWS

The use of nutrients such as nitrogen (N) and phosphorus (P) in agricultural systems has contributed to a tremendous growth of crop and livestock production. Nutrient consumption is forecast to increase in coming years, fueled by the population growth, urbanisation, rising incomes, policies, technology and high demand for livestock products.

Nutrient losses to the environment are inherent to these biogeochemical cycles, for example, through leaching and runoff from fertilized soils and manure storage; soil erosion, or emissions to the atmosphere, such as ammonia. These losses potentially threaten water, soil and air quality, but also climate, biodiversity and human health.

The challenge is, however, to measure N and P flows and associated environmental impacts in livestock supply chains because of the difficulty of measuring nutrient dynamics, which led to contrasting methodologies.

Success story – In response, the LEAP Partnership in 2016, formed a Technical Advisory Group, composed of 42 international experts on nutrient flows and impact

assessment, with the objective of developing guidance on Nutrient Flows and Impact Assessment for Eutrophication and Acidification. These guidelines describe in detail the approach to account for N and P fluxes in diverse livestock supply chains in a modular manner. The guidelines cover feed production, animal production, manure management and processing. The guidelines offer a clear international guide for measuring nutrient losses consistently and transparently. By measuring how much and where nutrients are lost or wasted, stakeholders can set clear priorities and strategies.

On horizon - The draft nutrient guidelines have undergone an independent technical reviewed process, and will undergo a three months public review to further improve the guidelines. We will continue to work with partners to make the guidelines operational and to accelerate the speed and scale of efforts to reduce the sector's role in nutrient losses.



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LEAP WORKS TO HELP COUNTRIES MANAGE WATER RESOURCES SUSTAINABLY

Freshwater is an increasingly scarce resource whose availability varies widely over temporal and spatial scales; furthermore, water is essential to life and a crucial factor in agricultural food production. Population growth and increasing social pressures on global water resources have required communities around the globe to focus on the future of water availability.

There is growing recognition of the increasing competition for water as scarcity increases under the combined pressures of climate change and increasing demand for food.

Hence understanding the distribution and demands for freshwater in livestock production are of particular importance. Good science and technical expertise are needed, especially because water resource management

70% of global freshwater withdrawal is used by agriculture.

is entering an era of uncertainty, greater variability and increasing risks as a result of increasing water demand and pollution, as well as climate change.

On the Horizon: In 2016 LEAP initiated its work programme to develop a sector specific tool to assess impacts of livestock on water. The Water TAG was composed of 40 international experts on water resources and footprint. This draft guidelines present principles and requirements for the assessment of water use in livestock production. They have undergone an independent review, and will undergo a three months public review to further improve the guidelines.



WHY ROAD TESTING IS IMPORTANT

A conversation with Gonzalo Becoña from Plan Agropecuario, Uruguay

■ What is Uruguay's interest in LEAP's work?

GB: As you know, with its Intended Nationally Determined Contribution (INDC), Uruguay has made a clear commitment to adopt a low-carbon growth agenda by setting ambitious targets that address both climate change mitigation and adaptation. In order to demonstrate and monitor our progress towards achieving these targets, tools such as those developed by LEAP are important. For this reason, scientists from Uruguay have been involved in the development of the LEAP guidelines and now in the road testing of the guidelines.

■ Which guidelines were road tested?

GB: Because of the importance of ruminant systems, we have road tested the large and small ruminant guidelines. The guidelines were applied in typical beef and sheep systems in Uruguay (breeding, rearing and fattening phases) with varying degree of use of the natural resources. The goal was to track progress in environmental impact from the implementation of technologies that improve animal performance.

■ What key lessons did you draw from this exercise?

GB: The road testing has been useful in identifying key gaps in information required to assess the environmental performance of our systems which is important for setting the research agenda. We also noted through this process a change in mindset in our technical advisors who have made progress in integrating the financial analysis with the environmental results and in recommending good practices that reduce environmental impact at farm level. The road testing also highlighted that collection of

Developing guidance for measurement and monitoring involves complex technical decisions that need real-world feedback to ensure the right balance is achieved between rigor and ease of use while keeping in view the capacity of different users - both experienced and new users.

information and continued monitoring and evaluation are the key aspects for the application of environmental assessment and accuracy of results.

■ What do you think is the value-added of LEAP's work?

GB: LEAP is a pioneer in developing sector-specific harmonized guidelines to support countries and stakeholders in measuring and monitoring progress. For countries like Uruguay where livestock plays an important role, these science-based tools are fundamental for assessing performance of the sector, and as a major exporter of livestock products promoting sustainable production systems based on traceability and certification as well as on sound scientific evidence are all key aspects to be considered in further development of marketing and promotion of Uruguayan livestock products.







We are delighted to recognize the diverse group of partners who share our goals, values and commitment to a more sustainable livestock sector.

**ACKNOWLEDGING
OUR PARTNERS**

Private sector at the Steering Committee

- International Feed Industry Federation (IFIF)
- International Dairy Federation (IDF)
- International Meat Secretariat (IMS)
- International Egg Commission (IEC)
- International Poultry Council (IPC)
- International Wool and Textiles Organization (IWTO)
- International Council of Tanner (ICT)

Countries at the Steering Committee

- Argentina (Observer status)
- Australia (Observer status)
- Brazil (Observer status)
- China (Observer status)
- Canada
- Costa Rica (Observer status)
- France
- Hungary
- India (Observer status)
- Ireland
- The Netherlands
- Switzerland
- New Zealand
- Nigeria
- Italy
- Uruguay

Non-governmental organizations (NGO) and civil society organizations (CSOs) at the Steering Committee

- World Wildlife Fund – WWF
- World Vision International
- World Alliance of Mobile Indigenous Peoples – WAMIP
- International Planning Committee for food sovereignty – IPC
- International Union for Conservation of Nature – IUCN

Donors

- Canada, France, Ireland, the Netherlands, New Zealand, Switzerland, Uruguay
- International Feed Industry Federation (IFIF); DSM Nutritional Products AG, Novus International; Global Feed LCA Institute (GFLI); European Vegetable Oil and Proteinmeal Industry (FEDIOL); International Dairy Federation (IDF); International Meat Secretariat (IMS); Instituto Nacional de Carnes Uruguay (INAC); International Egg Commission (IEC); International Poultry Council (IPC); International Council of Tanners (ICT); International Wool and Textile Organization (IWTO); International Federation for **Animal Health**

Advisory and networking

- ISO
- TU Berlin
- Global Research Alliance
- Joint Research Centre
- European Commission
- UN Environment
- OIE
- World Bank

Additional participants

UNIDO, The Sustainability Consortium, Young Naturalist Network, Kushanda, East Eagle Foundation, Bhupathi Development Trust, Tanzania House of Hope, Animal Sciences Institute, ECO2 Project Ltd, 2.-0 LCA consultants, Lalmoni Agro limited, League for Pastoral Peoples and Endogenous Livestock Development (LPP), Carbon Trust, Carbone Guinée, VanDrie Group, Asociación Civil OIKOS, ENEA, Italian Network on LCA, IDF Chile, The American Biogas Council, Abibimman Foundation, Matopos Research Institute, Universidad Tecnológica Nacional – Facultad Regional de Mendoza, Italian Breeders Association (AIA), PigCHAMP Pro Europa, S.L., Earth Support Programme.

Feed TAG experts

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Feed TAG reviewers

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Poultry TAG experts

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Water TAG

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