



**FOOD  
FOREVER**

POLICY BRIEF  
JUNE 2021



# Multiple Roles of Livestock for Sustainable Development

---

Catherine Marguerat



# The Food Forever Initiative in Support of Sustainable Development



Eradication of poverty in all its dimensions in order to end hunger and malnutrition is essential for sustainable development. Sustainability is defined as meeting the needs of the present generation, without compromising the ability of future generations to meet their needs, relying on the three main pillars: economic, environmental and social.

The Food Forever Initiative (FFI) – Biodiversity for Resilient Food Systems – was implemented 2017 by the Global Crop Trust in an effort to address the United Nations Sustainable Development Goals (SDG), focusing particularly on the Goal 2 “Zero Hunger”: end hunger, achieve food security, improve nutrition and promote sustainable agriculture. FFI focuses mainly on Target 2.5: safeguard and share the genetic diversity of both crops and livestock, that provide the foundation of our food production. The Initiative’s goals are to primarily raise public awareness on the fundamental importance of crop and livestock diversity, while taking substantive action among its partners and stakeholders in order to ensure its maintenance. Within its mandate, the FFI identifies ways to raise awareness of the importance of livestock for sustainable development and to achieve global food security, considering its four dimensions: availability, access, utilization and stability of the safe and nutritious food. The aim is to increase the understanding, the visibility and the appreciation of livestock as key contributor to sustainable food systems.

This document addresses the contribution of the livestock sector to produce enough nutritious food for a growing world population while facing many challenges. It outlines the role of livestock in ecosystem services and gives an insight to the importance of livestock genetic diversity related to food systems. Actions for FFI within these contexts are outlined.

## Sustainable Agriculture

In order to ensure food security, agriculture must be sustainable and effective from economic, social and environmental perspectives. It includes the safeguard of land, air, water and genetic resources for future generations. In 2050 the world’s population is expected to reach over 9,7 billion (1). By then, around 70 percent of the population will live in cities or urban areas. This means, that the gap between urban and rural life will grow continuously and the understanding for agriculture will decline at a scary speed. Today, 8.9 percent of the world population are affected by hunger and in 2019, an estimated 2 billion people did not have regular access to safe, nutritious and sufficient food (2). Agriculture not only feeds the world; it is also an important sector to improve food security for 80% of the world’s poor living in rural areas and working mainly in farming. Agriculture contributes to reduce poverty by providing livelihoods and raising incomes. Livestock accounts for 40% of agricultural GDP in developed and for 20% in developing countries and 1.3 billion people depend mainly on livestock for their livelihoods (3).

## Livestock’s Contribution to Ending Hunger

Livestock is directly or indirectly linked to most of the 17 Sustainable Development Goals (SDG) and contributes to sustainable and healthy food production systems. Livestock is a key player to achieve SDG 2- end hunger - and SDG 15 - life on land -. According to FAO, ending hunger includes universal access to safe, nutritious and sufficient food all-year round. It implies that productivity of livestock and incomes of small-scale food producers must improve and increase, while sustainable and resilient food production systems have to be promoted.

Although production growth and efficiency of the livestock sector have increased rapidly in the last decades, livestock and animal-source food production have progressively been regarded as one of the major contributors to the most serious environmental problems. The current emphasis on negative impacts of livestock production on human health and animal welfare, as well as on climate, environment and biodiversity as a whole, have almost outclassed the beneficial roles of livestock in achieving global food security, nutrition and sustainable rural development. Drivers such as population growth, urbanization, raising incomes, changing market conditions and climate change as well as environmental and animal welfare legislation constitute substantial challenges for the livestock sector. Changes in consumers’ eating behaviors and trends towards vegetarianism and veganism, based on environmental concerns, health recommendations or ethical motives, strengthened by animal rights movements, are increasing and threatening livestock-derived food.

In this context, it is worth to recall that roughly 86% of feed consumed by livestock cannot be consumed by humans (4). Animal feed is made up of fodder (grass, hay, silage) that comes from grasslands that also have a high potential for carbon fixation if managed properly. By producing milk and meat, ruminants are making best use of grassland vegetation which covers over 25% of the world’s land surface, mostly non-arable rangelands. Globally, animals contribute to 20% of energy and 45% of protein in human diets and deliver a variety of other important nutrients, e.g., 99% of Vitamin B12 (5). Ninety percent of the animal protein consumed worldwide is provided by only a dozen animal species (6). In less developed countries, where women rearing ruminants providing milk to children in the family and for schools, livestock plays a crucial role in food security.



**90% of the animal protein consumed worldwide is provided by only a dozen animal species.**

In conclusion, livestock contributes in multiple ways to end hunger by providing the world with sufficient and reliable supplies of nutritious animal-source food, by generating income and by providing employment. It creates synergies and efficiencies in the use of natural resources by transforming vegetation primarily not edible for humans, into nourishing food. Technological improvement in feeding and breeding methods will continue and will have further positive effects on efficiency and sustainability of food production from livestock.

### Livestock's Contributions to Ecosystem Services

Besides producing food from natural resources not edible for humans, livestock provides multiple ecosystem services and thanks to its mobility it is much more resilient to environmental changes than crops. Some ecosystem services provided are easier to communicate and to understand than others. Following are a just a few examples how livestock contributes to the different services:

- Provisioning services (supply of food, fibers and skins, draught power, fertilizer, energy, ...)
- Regulating and supporting services (most regulating and supporting services arise from the direct interaction of animals with their environments such as converting non-human edible feed into food, waste recycling, weed control through grazing, distribution of nutrients in the landscape resulting in soil improvement, spreading of seeds, maintenance of soil structure and fertility, prevention of land degradation and erosion, contribution to the mitigation of climate change because restored grasslands can trap large volumes of atmospheric carbon, ...)
- Cultural services (support socio-cultural needs, ecotourism, local development, cultural heritage, cultural identity, ...)

In conclusion, by providing ecosystem services, livestock creates benefits for their owners and for the society. It creates important livelihoods opportunities mainly for women in developing countries and helps to keep the youth in rural areas. Livestock and farmers are environmental stewards by maintaining the biodiversity, agro-ecosystems and wealth of livestock breeds. Livestock thus contributes to sustainable development.

### Livestock and Genetic Diversity

Livestock species and breeds play important roles in providing different ecosystem services. However, livestock genetic diversity is endangered, what may hamper future resilience of the sector to respond to climate change, diseases and other challenges in different regions of the world. Only eight of forty domesticated mammalian and avian species provide more than 95% of human food supply derived from livestock (7). With increasing demand for animal-source products over the last 50 years, traditional production systems with a large variety of breeds and thus genetic diversity have been gradually replaced by intensive production systems in many regions of the world, reducing the number of breeds. Using in commercial systems only a small number of highly productive breeds led to decreasing important ecosystem services provided by local breeds. Those are not very productive but robust breeds, showing unique attributes for adaptation and disease resistance as well as for specific uses and products.

As of 2021, a total of 8,771 livestock breeds are recorded in the FAO database of DAD-IS, whereof 2281 are classified as being at risk of extinction. To fulfill different roles in various environments, conservation of different species and breeds and a wide genetic diversity within breeds are crucial as insurance policy for future needs of the sector, for sustainable food production systems and for resilience to climate change, thus contributing to sustainable agriculture.

### Livestock Reducing Food Loss and Affected by Food Waste

Efforts towards sustainable food production and the beneficial roles of livestock in ecosystem services in the food system are sacrificed in vain, if about 1/3 of the food produced globally is lost or wasted along the food value chain. Economic growth, increased food demands and changes in lifestyle steadily boost the use of natural resources, lead to overconsumption and food waste in households that have negative ecological impacts. To sustainably meet the growing food demand and end hunger, actions to reduce food waste at all levels, including consumers' level and to reuse wasted food for biogas production or as feed for livestock must be undertaken.

An average household in Europe discards about 25% of the food purchased, much of which is still suitable for human consumption. There are different ways to minimize the amount of food thrown



away at consumers/household level. They include: improved storage, preparation of the right amount of food, creative solutions with leftovers and learning to use all parts of animal as a source of food. If the amount of food wasted within the food system can be reduced, then less water, less fertilizer, less land, less transport and less energy will be needed and the pressure on natural resources will decrease (8). Addressing food loss and waste in developed countries is critical to improve food and nutrition security, as well as to meet climate goals, reduce stress on the environment and to become more sustainable (9). Influencers and Bloggers have an important role to play in creating certain fashion and encouraging followers, for instance they demonstrate how vegetables not meeting consumers expectations can find their way to the table. Let's put forces together with all sectors along the food production chain to restore value to animal-sourced food "waste".

### Sustainable Food Systems and Actions for FFI

Food systems comprise the food we eat, but also processes and infrastructures necessary for its production and distribution systems. They are considered sustainable if they generate economic, social and environmental desired outcomes, are beneficial for biodiversity, water, soil, support animal and plant health and if they minimize ecological footprint as well as food loss and waste.

The FFI can make its contribution to the development of sustainable food systems by engaging and encouraging consumers to new experiences in taking the following steps through both social medias and direct actions.

### We want to protect what we know to be endangered:

- Support the livestock sector in its efforts to receive acknowledgement for providing essential services for the society and have it valued by decision makers
- Disseminate accurate information on contributions of livestock to food security
- Establish communication channels to promote issues related to food of livestock origin
- Increase awareness about the importance of biodiversity for food security and nutrition
- Improve consumers awareness and promote solutions to reduce food loss in households
- Promote quality assurance schemes, including labeling of products obtained from a given breed
- Implement actions to prepare food by valorizing all livestock-based products through new creative ways of using under-utilized parts of carcass
- Promote best practices to prepare healthy food



### Conclusions

The livestock sector plays a key role in sustainable agriculture by providing the world with adequate and reliable supplies of safe, healthy and nutritious food, by improving livelihoods and generating income (10). Increased livestock productivity and efficiency, enhanced sustainable use of natural resources, conservation strategies, improved management technologies and further development of animal genetic resources around the world, contribute to sustainable development, poverty reduction, increase of food security and improvement of human nutrition. Sustainable development is contributing to all SDG's, developing positive synergies, reducing negative impacts on the ecosystem and supporting conservation of genetic diversity of livestock.

The Covid-19 pandemic in 2020 has shown, that the shutdown of the aviation and transportation sectors decreased harmful Greenhouse Gaz (GHG) emissions. Livestock does produce GHG, but it cannot be "shut down". The situation during the pandemic has also shown, that locally produced animal source food must be available at all times because it is more efficient and sustainable than transportation of food across the world. Improvements in genetics, feeding methods, grazing managements and others have already led to significant improvements over the past years and the production of animal source food has increased to help to feed a world with growing population and threatening climate change. systems.

### References

(1) UN 2019: (<https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html>)

(2) FAO, IFAD, UNICEF, WFP & WHO. 2020: The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO

(3) FAO 2021: <http://www.fao.org/animal-production/en/>

(4) A. Mottet et al 2017: Livestock on our plates or eating at our table? Glob. Food Sec. 14: 1-8

(5) Delta Model, 2018: [sustainablenutritioninitiative.com](http://sustainablenutritioninitiative.com)

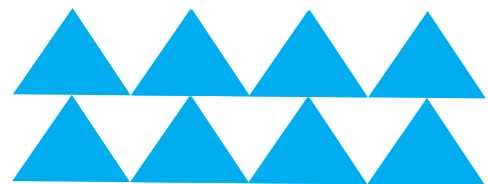
(6) FAO 2009: Expert\_paper How to feed the world in 2050

(7) FAO 2020: FAO highlights the importance of sustainably managed agro-ecosystems

(8) European Environmental Agency 2021: From production to waste: the food system

(9) World Bank 30.9.2020: Agriculture and food

(10) FAO 2018: World Livestock: Transforming the livestock sector through the Sustainable Development Goals







**FOOD  
FOREVER**