Photo credit: Nikola Knezevic

A Fair Transition of Livestock Systems through Agroecology

Position Paper

Agroecology Europe

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A position paper on animal farming developed by Agroecology Europe focusing on agroecology and those farmers and citizens who have a vision that agriculture can adopt sustainable livestock production systems, agree on fair prices, improve territorial and climate resilience, and reach fair socioeconomic development.

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Table of Contents

1 The current landscape 3

2 Reduce animal intensity and avoid producing everything everywhere 5

3 Close biological cycles 6

4 Reduce GHG emissions along with reduce fertilizers and energy consumption to avoid a C tunnel vision 7

5 Increase respect for animal welfare in European production systems 8

6 Integrate a new social vision 9

7 Reconnect livestock and citizens through an agroecological livestock system 9

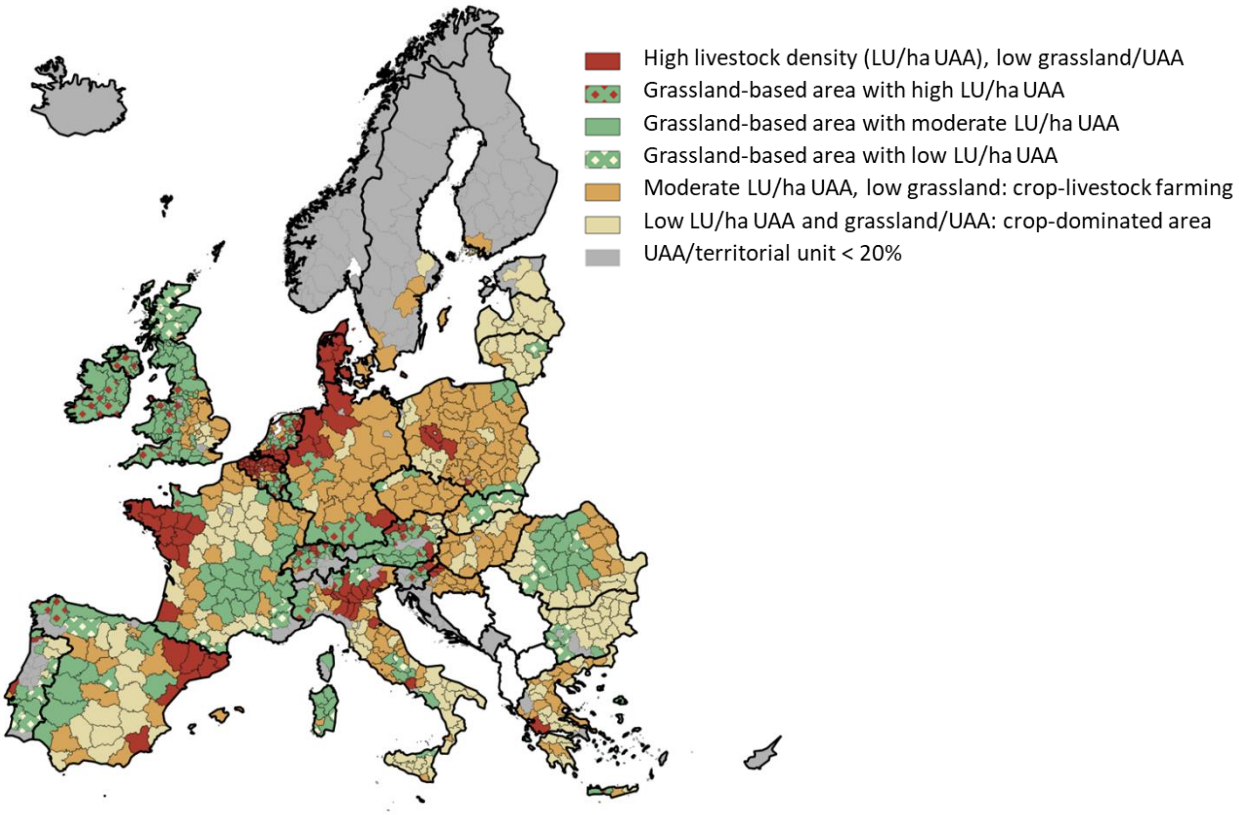
8 References 11

1 The current landscape

At the end of 2023, there were 133 million pigs, 4 million bovine animals, 58 million sheep, and 11 million goats in the EU (Eurostat, 2023). In the poultry sector, 13.3 million tonnes of poultry meat was produced in 2023, mainly chickens (broilers), which represented 84.2% of the total.

The diversity of livestock production areas across Europe is still very high as shown in Fig. 1 and consequently the negative impacts of animal farming and the services they provide to other agricultural sectors and to the society clearly differ, requesting innovative and locally adapted solutions specifically tailored for heterogeneous conditions.

Figure 1: Typology of European livestock production areas[1] (based on Eurostat data 2010 at the NUTS3)



Source: Dumont et al. (2019)

But across the many heterogeneous production systems, all farmers are facing similar dramatic economic, climatic, and environmental challenges problems - such as price volatility, extreme weather events, and biodiversity loss - and despite the consistent economic support provided by the Common Agricultural Policy (CAP), from 2005 to 2020 the number of total farms has dropped by 37%. This decline was particularly pronounced among livestock farms (Eurostat, 2023).

New policies need to provide systemic responses for a just transition of the agricultural sector linking livestock production systems with citizens' requests for a food system that provides healthy, diversified, and nutritious food and that is linked to individual territories and cultures of Europe. It is urgent to implement more coordinated territorial and European measures that

[1] LU: Livestock Unit

UAA: Utilised Agricultural Area

respond to these combined requests while also addressing fair relations and bonds with international markets and communities.

Agroecology has developed much scientific evidence and is grounded in the diversity of European cultures and the 13 principles of Agroecology (HLPE, 2019). Many agroecological farmers are already adopting different levels of extensification, identifying new grazing opportunities and designing feeding systems based on local resources that enhance the ecosystem services provided by pasture-based livestock systems. Introducing different mix of animals, diversifying through double purpose beef/milk production and mixed beef/crop production modifies labour intensity, but reduces the use of external inputs and associated pollutions, while developing territorial and innovative market opportunities.

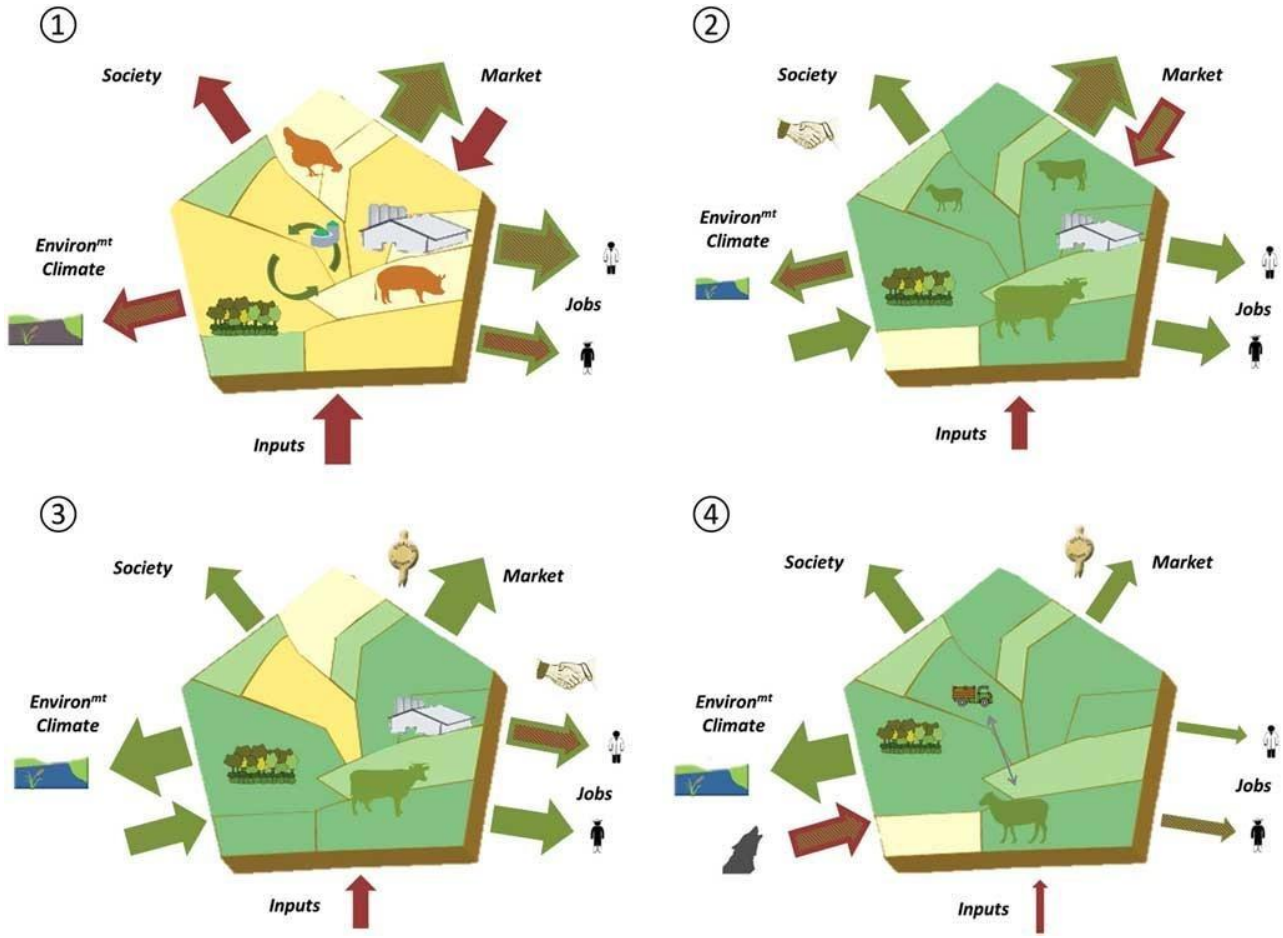
Agroecology is therefore mature to pave the way for scaling up a fair transition of the livestock sector and can open a window of opportunity for the future of sustainable animal farming by conciliating economy, efficiency, and production priorities, while shaping landscape, improving climate resilience, and social and family priorities. But it still needs to be better integrated in the policies and support mechanisms of the EU.

2 Reduce animal intensity and avoid producing everything everywhere

Fundamental to stir up the reconnection between livestock and crops away from specialised, intensive livestock systems is the **territorial approach**, and there is a need to understand the **trade-offs and synergies** induced by livestock production and analyse their relevance or irrelevance across spatial scales. The ecological, socio-economic and cultural aspects of livestock farming need to be jointly analysed to inform local stakeholders and policy makers about potential opportunities and threats of **options for a more sustainable livestock sector in Europe**.

Figure 2 represents the bundle of services and impacts provided by livestock farming in four territories across Europe (1. Catalonia, 2. Ireland, 3. Franche-Comté a grass-based but intensive cheese production system in North-East France, 4. Provence).

Figure 2: Bundle of services and impacts provided by livestock farming in four territories across Europe



Source: Dumont et al. (2019)

In this graphical summary, two shades of green within the pentagon account for permanent and temporary grasslands, and two shades of yellow for the diversity of crop rotations. Grass-fed animals are in green, those fed with concentrate feeds in orange. Inward-pointing arrows represent market fluctuations, use of external input and ecosystem services (green) or dis-services (e.g. predation risk in red). Outward facing arrows represent jobs, environmental and climatic impacts, services provided to cropping systems, and social/cultural factors such as cultural heritage, open landscapes, or ethical considerations on animal welfare.

At farm level some of the concrete agroecological actions that could be supported by specific policies and programs to better link animal production to the territories are:

- **At system level, re-organize farms around integrated agro-silvo-pastoral systems and increased grazing opportunities** would preserve biodiversity, balance manure and may reduce sanitary costs of grazing animals having access to fresh forage with high bioavailability of nutrients (vitamins, minerals) that stimulate the immune system. Feeding ruminants on grass-based diets has benefits on product sensory and nutritional qualities.
- **At feeding level, agroecological feeding programs can be developed around local opportunities** to increase on-farm production of feed including hay and crops with high protein content (peas, fava bean, alfalfa). Producing a large part of required feed resources on farm (while adapting herd size to land capacity) enhances farm feeding autonomy, which has strong economic and environmental benefits. Enhancing farm feeding autonomy also calls to produce crops without harmful products used in agriculture, especially in upland areas that remain important refuge areas for insects and birds (Hallmann et al., 2017; Mühlethaler et al., 2024).
- **At animal level, agroecological farmers could strategically extend productive milking periods**. Scientific finding shows that if the milking period would pass from 2,5 years to 5 years per cow global methane emissions per unit of product – not absolute emissions - would decrease by 3,5% (Pisseri, 2023).
- **At animal genetic level, selection of double purpose animals should be preferred** as they can better optimize available local forage resources and have reduced feeding needs. A broad spectrum of scholarly work (Pisseri, 2024) has discussed that a genetic transition would stabilize and optimize production levels by making the livestock farmers less dependent on market fluctuations and acute climatic variations, and lower their production costs.

Finally, all these innovations require **changing the way young farmers are trained** so that they can conceive and evaluate their farming system in multiple dimensions, including pollution reduction, biodiversity conservation, creation of healthy soils and healthy food.

For the next CAP post-2027, networks of trust, collaboration and mutual training need to be developed by involving farmers, local planners and policy makers based on a shared **long-term agroecological vision** to make farms and territories resilient and secure, and to increase the development of diversified local production business opportunities that respect and add value to integrated and sustainable animal production systems.

3 Close biological cycles

Agroecology focuses on improving on-farm use of residues, and closing the biological cycles of livestock specialised farms that have opened the **nitrogen cycle** because of the gradual disconnection of crop and livestock systems in Europe. This opening resulted in a massive input of reactive nitrogen to the European food system through two main sources: **i) plant protein imports for animal feed**, and **ii) the increase of expensive synthetic fertilizers for specialised crop farms**, as the practice of nitrogen transfer from grassland to crops systems have gradually diminished with territorial specialisation.

The paradox is that without an integrated and cooperative approach between the fertility producers (livestock) and the fertility consumers (crops) biological cycles remain open (Garnier et al., 2023), creating waste, pollution, and GHG emissions. According to this study, NH_3 volatilization in both temperate and Mediterranean regions roughly follow the distribution of livestock density and is closely correlated with the level of fertilization intensity and agriculture system specialization into either stockless crop farming or intensive livestock farming. In a scenario based on the EU-Farm-to-Fork strategy, 24-35% reduction of nitrogen loss can be predicted, while through the adoption of an agroecology scenario, reductions up to 60-81% in NH_3, N_2O, and NO_3^- emissions can be predicted.

Recommendations

The next CAP should develop more specific agroecological subsidies for farmers who introduce **innovative actions and schemes to drastically reduce dependence from external inputs** and increase opportunities for closing biological cycles. The CAP should prioritize actions that reduce reliance on external synthetic inputs, such as fertilizers and imported protein feeds. Subsidies could reward on-farm nutrient recycling, use of cover crops, crop rotations including legumes, and integration of mixed farming systems that optimize nitrogen use efficiency.

European policies should support a **re-balancing of diets for both humans and animals** through promoting actively a change on consumptions patterns for protein and avoid food-feed competition.

4 Reduce GHG emissions along with reduce fertilizers and energy consumption to avoid a C tunnel vision

Livestock production and supply chain at global level account for nearly 15 % of the total anthropogenic GHG emissions (Soussana et al., 2014), and livestock production systems emit 37 % of anthropogenic methane (CH4) (mostly from enteric fermentation by ruminants). Moreover, livestock systems cause 65 % of anthropogenic nitrous oxide emissions, the great majority from manure, and 9 % of global anthropogenic carbon dioxide (CO2) emissions. The main synergy derived from mixing crops and animals results from animal manures becoming a resource instead of a nuisance, because they are rich in nutrients and provide soil micro-organisms with a key source of energy (Dumont et al., 2013). Also, at the global soil organic carbon sequestration potential is estimated to be 0.01-0.3 Gt carbon per year on 3.7 billion ha of permanent pasture. Soil carbon sequestration by the world's permanent pastures could potentially offset up to 4 percent of global GHG emissions, by improving permanent and semi-permanent land grazing practices, restoring degraded lands and reducing nitrogen fertilization while promoting agricultural practices that enhance nitrogen fixation. However, a recent modelling study suggests that soil C sequestration alone in managed grasslands cannot compensate for the climate change impact of current ruminant emissions (Wang et al., 2023), which calls for decreasing the number of ruminants.

The EU goal to become climate neutral by 2050 is enshrined in the European Climate Law (European Commission, 2021) and the systemic approach of agroecology provides principles and practices to reduce emission intensity through reduction of imported animal feeding, improved manure, agroforestry, grassland and livestock management for carbon sequestration.

The discussions at European and national level on how the livestock sector can significantly engage in reduction of emissions and carbon sequestration is insufficiently developed but urgent, and the benefits and the challenges of an agroecological fair transition should be at the core of such discussions. Carbon credits, or fines for head of animal in intensive production systems are currently discussed at European and national level, but as many livestock specialist farms are concerned, there is an urgent need to enlarge awareness on the agroecological approaches that can be adapted to the different models of farms to implement the European Climate Law.

Innovative regulations such as the Danish CO_2 tax on livestock farmers based on the CO_2-equivalent emissions of their animals (Ministry of foreign affairs of Denmark, 2024), particularly methane from cattle, pigs, and sheep are an example of how national countries adopt measures to reduce emissions in livestock sector, and represent examples for other European countries who want to engage in local solutions for an agroecological transition of the livestock sector.

But a carbon tunnel vision must be avoided, and replaced by a long term, systemic vision that also **encourages increasing farm reliance on Biological Nitrogen Fertilization (BNF**). On-farm production of legumes and managing grasslands with less mineral nitrogen fertilizers and **more**

reliance on biodiversity of species and agroecosystems should be supported to reduce cost of external inputs and avoid GHG emissions caused by the process of industrial synthesis and by the transport of mineral nitrogen fertilizers, and to increase the digestibility and protein content of the herbage.

There is a need to introduce agroecological principles in European policies to secure economic and cultural sovereignty of local socioecological systems that are responsible for the European bio-cultural diversity (Bobiec et al., 2024).

Under the Common Agricultural Policy (CAP), **GAEC 1** (Good Agricultural and Environmental Condition standard 1) is directly related to **permanent grassland**. It aims to maintain the ratio of permanent grassland to total agricultural area to protect carbon-rich soils and preserve biodiversity. Farmers are required to avoid converting permanent grasslands into arable land, particularly in designated environmentally sensitive areas.

While CAP modernisation is important for reducing administrative burdens on farmers, **the CAP simplification must not undermine core environmental safeguards.** Allowing the threshold for permanent grassland conversion to increase from 5% to 10% risks significant loss of carbon-rich soils and biodiversity. Such a shift would contradict the EU's climate and environmental goals, weakening the very principles the CAP is meant to uphold. **Therefore, the current GAEC 1 limit must be upheld.**

At the same time the **systemic vision comprises reducing farm dependence from non-renewable energy.** The current global energy scarcity is leading an increase in global energy prices and indirectly in the price of feed. Therefore, the large part of animal production that relies on cereals, pulses and cultivated forage is vulnerable to energy crises and may experience a sharp loss of competitiveness. When the cost of feed from arable land will become unsustainable for farmers, the reduction of animal numbers will be inevitable and feeding strategies will follow agroecological solutions based on grazing, adaptation of feeding strategies, and ultimately on rebalancing human diets as more arable land will be dedicated to the more profitable market of direct human feeding (Benoit & Mottet, 2023).

5 Increase respect for animal welfare in European production systems

The welfare of farmed animals is the absence of suffering, pathological manifestations and behavioural disorders, the full expression of species and breed characteristics, attitudes, individual characteristics, and the ability to relate to both their own species and different species such as humans.

Agroecology values both the physical-health condition of the farmed animals and their "mental" or psychological condition, as well as the harmony between the animal and the external environment.

Consideration is also given to the **ethological skills of the breeder,** his or her ability to have reassuring behaviours and to be able to express authority with the animals, and the opportunities for animals to express parental, play, social, sexual, and physical movements. Agroecology recommends increasing investments in specific ethological training programs and to provide specific funding to the agroecological farms who are adapting their infrastructures and their production practices to respect the physical-health and the psychological needs of farmed animals.

The gap between farmers and citizens needs to be filled by including citizens in the ethical choices of farmers and jointly exploring innovative solutions. An example is the creation of a new value chain around farmers in France (INRAE, 2024) who are producing calves with a longer life and therefore a meat with different organoleptic characteristics, that is sold by local butcher to local citizens who are concerned about the ethical values of animals' lives.

Growing awareness and respect for the silent role of livestock in the fair transition towards a sustainable food system should take place through an open dialogue with all stakeholders (Coeugnet et al. 2023).

Agroecology Europe welcome and stands ready to collaborate with the EU to develop fair and just slaughter proposals by 2026 and recommends widening the adoption of innovative measures that deepen the respect of psychological traits of farmed animals.

6 Integrate a new social vision

Engaging in reduction of unemployment rates deriving from industrial agriculture through a fair transition towards agroecology is clearly demonstrated by recent studies (FAO, CIRAD, & RySS, 2024) and many social benefits would derive from adopting agroecology in our food systems. Agricultural employment especially for young people could be enhanced through the uptake of agroecology, and fair working opportunities in agriculture based on ethical values, justice, fairness, inclusivity that are among the main European grounding principles could be encouraged by supporting an agroecological fair transition of livestock systems.

Constructing the real cost of food that also reflects its environmental production costs, transport, distribution costs including externalities, biodiversity loss, carbon emissions and credits, and fair social costs is becoming a priority for the farmers, for all the stakeholders of the food systems, and for the final consumers as they are all directly affected. The current externalities have been estimated to be almost double (19.8 trillion USD) the current total global food consumption (9 trillion USD). These externalities accrue from seven trillion USD (range 4-11) in environmental costs, 11 trillion USD (range 3-39) in costs to human life and one trillion USD (range 0.2-1.7) in economic costs. This means that food is roughly a third cheaper than it would be if these externalities were included in market pricing.

It is time for the EU to understand and politically engage in a honest debate and an open dialogue engaging farmers, citizens, private sector and policy makers on how the right price of food can also promote food security and sovereignty while assuring a right price for farmers (including the livestock producers) as they are central to ensure fair prices for all, while maintaining the functions and the beauty of the territories and ensuring a rural fair socio-economic development.

Better understanding the inextricably link between soil health, human health, and animal health that can be positively managed through agroecological management practices such as mixed grazing systems can accompany us to prevent new sanitary crisis when all the necessary disease control measures have been secured (FAO, UNEP, WHO, & WOAH, 2022; Ducrot et al., 2024).

7 Reconnect livestock and citizens through an agroecological livestock system

Territorial animal product specialities connect animal production systems with the landscape, the cultures and the people who traditionally hold recipes and celebrate festivities linked to their local products. These animal products derive from a heterogeneity of farming systems and it is important to continue supporting the diversity of these systems, especially the ones that are based on integrating crop and livestock production and the ones who rely on grazing animals where the fundamental role of the farmer is central for the management of biodiversity-functioning service relationship. Feeding systems based on reduced import of animal feed should also be encouraged to avoid feed-food competition, and the real cost of meat and milk

production should better reflect the environmental costs of production especially in terms of pollution, climate change and human and animal health and welfare.

Recommendations

Support at European and national level should refrain from supporting intensification of animal production disconnected from the availability of agricultural land that provide the necessary feed resources and should increase direct support to livestock farmers and pastoralists ensuring a fair standard of living for them.

CAP strategic plans should better align and specify the interplay between ruminants and grasslands by developing better integrated assessments, strategies, and local policies. The CAP should limit livestock numbers and stop abandonment or conversion of grassland trends because allowing grasslands to age appears to be an effective lever for preserving the support, regulation and cultural services from which farmers and society benefit. BISS should differentiate the amount of support per ha amongst different groups of territories faced with similar socio-economic conditions including traditional forms of agriculture such as traditional extensive alpine pastures. In GAEC 1 permanent grasslands should be included, in GAEC 7 and other herbaceous forages and in GAEC 9 environmentally sensitive permanent grasslands.

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