ESAAF Science–Policy Roundtable on Climate-Resilient Livestock Systems

Scientific and Policy Key message from the event

1. **Climate resilience requires integrated and context-specific livestock systems**

Climate change affects livestock systems through multiple interconnected pathways, including feed and forage availability, water resources, animal health and welfare, disease dynamics, biodiversity and farm economics (*MH.Nozières-Petit; N.Sevilla; R.Hernandez Alvarado*). Adaptation and mitigation strategies frequently generate both synergies and trade-offs, highlighting the need for integrated approaches that consider the functioning of livestock systems as a whole (*MH.Nozières-Petit*).

Because European livestock systems operate under highly diverse climatic, environmental and socio-economic conditions, there is no one-size-fits-all pathway towards climate resilience. Future policies should therefore provide a common framework (CAP) while supporting locally adapted solutions that strengthen feed autonomy, crop–livestock integration, circular resource use and adaptive management (*MH.Nozières-Petit; S.Oosting; D.Średnicka-Tober*).

2. Livestock is an essential component of resilient and circular food systems

Livestock contributes to sustainable food systems through multiple functions that extend well beyond food production (S.*Oosting*). Ruminants convert grasslands and human-inedible biomass into high-quality food, recycle nutrients through manure, maintain permanent grasslands, support biodiversity and contribute to the resilience of agricultural landscapes.

Assessing livestock solely through greenhouse gas emissions provides an incomplete picture of its contribution. Future sustainability assessments should also consider resource efficiency, nutrient cycling, ecosystem services and food-system resilience (S.*Oosting; MH.Nozières-Petit; D.Średnicka-Tober).*

3. **Climate change is reshaping animal health and welfare challenges**

Climate change and globalisation are modifying the distribution of pathogens, vectors and infectious diseases, increasing the risks associated with vector-borne diseases and zoonoses across Europe (*N.Sevilla*). Approximately 60% of emerging infectious diseases are zoonotic, underlining the importance of integrated surveillance, One Health approaches, improved diagnostics and vaccines, and investment in research infrastructures. Rising temperatures also expose livestock to increasing heat stress, affecting animal welfare, productivity and management practices, as illustrated by the case of pig transport (C.*Hernandez Alvarado*).

4. **Transition towards climate-resilient livestock systems requires aligning economic incentives with societal objectives**

Climate-resilient livestock systems provide a wide range of public goods—including biodiversity conservation, carbon storage, healthier soils, animal welfare and rural vitality—that are not sufficiently recognised or rewarded by current markets (*D.Średnicka-Tober*).

As a result, farmers frequently face a mismatch between the societal benefits generated by sustainable livestock practices and the economic incentives available to implement them. Creating an enabling policy framework that rewards these public goods and reduces transition risks will be essential to accelerate the uptake of climate-resilient livestock practices.

The transition should become economically rational, supported by well-designed incentives, reducing transition risks by, i.e., investment support, risk-sharing mechanisms, and strengthened knowledge systems, as well as value-chain transformation, creating market levers (*D.Średnicka-Tober*).

Scientific knowledge alone will not drive change. Aligning economic incentives with societal objectives will be a key condition for scaling up climate-resilient livestock systems across Europe.

5. Future livestock policies require stronger interdisciplinary scientific evidence

Addressing climate resilience requires knowledge that integrates animal science - especially animal genetics and breeding - veterinary medicine, agronomy, ecology, economics and social sciences. Better indicators are needed to assess not only productivity and greenhouse gas emissions, but also resilience, adaptive capacities, ecosystem services and long-term systems performance *(M-H.Nozières-Petit; S.Oosting; N.Sevilla; D.Średnicka-Tober)*.

The development of the future EU Livestock Strategy and Climate Resilience Plan offers an important opportunity to strengthen evidence-based policymaking through interdisciplinary scientific expertise.