The second session of the day was on the *role of livestock in nature and climate mitigation and adaptation*. This session included three presentations:

Philip Thornton: *Climate and Livestock in Africa: Future Transitions*

In his presentation, Philip explored Africa's growing food demand due to population growth, urbanization and climate and land use change. He outlines the need to rethink livestock systems, suggesting innovation can play a key role, including insects as feed, aquaponics, and agrivoltaics. He emphasizes hybrid systems combining traditional and modern practices to boost resilience, sustainability, and equity. Major barriers include land fragmentation, funding, and governance, but he advocates for participatory processes, regulatory reform, and interdisciplinary innovation to drive future transitions.

Alfy Gathorne-Hardy: *How Much Livestock Do We Need to Support Biodiversity?*

Alfy questioned how livestock can benefit biodiversity rather than harm it. Using the greater horseshoe bat as a case study, he illustrated how livestock dung supports insect populations that are vital for the bat's survival. His presentation highlighted the direct (e.g., dung, trampling) and indirect (e.g., hay meadows) benefits of livestock. He also stressed that there is no objective measure of how much biodiversity we need, so livestock policy must consider ecological, cultural, and functional trade-offs.

Masoud Ghaderi Zefreh: *Advances in Livestock Science and Technologies Enhance Projections of Climate Change Impacts*

Zefreh highlighted how livestock are both impacted by and contribute towards climate change. He described integrating recent innovations like genomic selection into Economy-Society-Environment (ESE) models to improve forecasting and policy. Using climate projections, he showed how heat stress reduces productivity but can be counteracted by genetic advancements. He argues that these innovations can boost efficiency while mitigating emissions. He concludes that interdisciplinary approaches are vital to sustainable livestock futures.

Key points from the table sessions are summarised below:

Equity and Inclusivity in Technology and Innovation

A recurring concern was ensuring that technological advancements in food and livestock systems do not reinforce existing inequalities. Questions were raised about who benefits from new technologies, and whether smallholders and marginalized groups—particularly women in

livestock handling—are included in decision-making. There was emphasis on collective support for small farms and inclusive innovations that combine both traditional knowledge and modern science. A “just transition” must balance access, affordability, and social equity to ensure no group is left behind as the sector evolves.

Sustainability, Circular Economy, and Biodiversity

Participants repeatedly highlighted the need for systems that minimise waste, promote biodiversity, and align with the circular economy. Mixed production systems were seen as beneficial, offering multiple environmental co-benefits. Instead of indiscriminate growth, the emphasis should be on optimising resource use, making full use of existing materials, and reframing productivity in ecological terms. The integration of traditional knowledge with new technology was identified as a pathway to more resilient and regenerative farming practices.

Context-Specific Approaches and Local Adaptation

The effectiveness of technologies was acknowledged to be context dependent. Similarly, pasture management, livestock breeding, and dietary needs vary greatly by region. The need to tailor solutions to local environments and cultural practices, with stakeholders and decision-makers engaged early to ensure relevance and uptake was highlighted. Adaptability, regional knowledge, and stakeholder involvement were deemed essential to successful implementation.

Research Communication, Policy, and Metrics

Participants highlighted the importance of translating research into policy through effective communication, particularly when resources are limited. There is a need for better advocacy and framing to secure political support and funding for food system interventions. Additionally, existing metrics often focus on human health or economic outputs, but concern that they may overlook animal welfare and environmental health were raised. The need for a "One Health" approach, integrating human, animal, and environmental considerations, was proposed.