Acknowledgements

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Donor and Sponsor Recognition

![Donor and Sponsor Recognition](image)
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Acronyms

AST  Agenda Support Team
AWAN  Animal Welfare Action Network
BMGF  Bill and Melinda Gates Foundation
CAAV  China Association of Animal Science and Veterinary Medicine
CIPAV  Research Center on Sustainable Agricultural Production Systems
COAG  Committee of Agriculture
COP23  23rd Conference of the Parties to the United Nations Framework Convention on Climate Change
FAO  Food and Agriculture Organization of the United Nations
FARM  Farmers Assuring Responsible Management
GASL  Global Agenda for Sustainable Livestock
GFFA  Global Forum for Food and Agriculture
GIZ  German Agency for International Cooperation
GNSPS  Global Network on Silvopastoral Systems
HLPF  High-level Political Forum on Sustainable Development
IDF  International Dairy Federation
IFCN  International Farm Comparison Network
IGW  International Green Week
ILRI  International Livestock Research Institute
KSU  Kansas State University
LEAP  Livestock Environmental Assessment and Performance Partnership
MASL  Mongolian Agenda for Sustainable Livestock
MSP  Multistakeholder Partnership
NGO  Non-governmental organization
OIE  World Organization for Animal Health
SDGs  Sustainable Development Goals of the UN Agenda 2030
US  United States
USA  Unites States of America
USD  US Dollar(s)
USDA  US Department of Agriculture
UN  United Nations
WAMIP  World Alliance of Mobile Indigenous Peoples
WWF  World Wildlife Fund
Background

The Global Agenda for Sustainable Livestock

The Global Agenda for Sustainable Livestock (GASL/the Global Agenda) is an international multistakeholder partnership founded in 2011. GASL’s mission is to enhance livestock holder’s commitment and investments in support of the Sustainable Development Goals of the UN Agenda 2030. The Global Agenda is supported and financed by both donor countries and private organizations and important in-kind contributions from its members. The secretariat, based at the Food and Agriculture Organization of the United Nations (FAO) in Rome, facilitates the activities, organizes meetings and disseminates information.

As a multistakeholder partnership, GASL brings people and institutions together to understand and recognize main questions and challenges in the livestock sector, to exchange expertise and to provide answers. The multistakeholder approach is more efficient and effective than actions of single stakeholders.

The Global Agenda consists of over 100 partners from governments, farmers, private sector, civil society, NGOs, donors and the research community and with support of FAO. One of GASL’s main assets is the diversity of views. The Global Agenda Action Networks collect regional and global experiences and produce advisory documents and guidelines for all partners in livestock systems.

The United Nations Sustainable Development Goals (SDGs) provide important benchmarks for GASL to measure progress in sustainable development. Livestock systems contribute to all 17 SDGs, many with positive and measurable results. The opportunities for poverty alleviation, food security, health, economic growth, innovation, climate stability and social cohesion are numerous and require continuous attention.

The Multistakeholder Partnership (MSP) Meeting in Manhattan is the 9th global MSP Meeting since GASL has been created in 2011. MSP Meetings have taken place in the following countries:

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<td>Brasilia, Brazil</td>
<td>Decision to focus on natural resource use with an open, consensual, action oriented, multistakeholder process</td>
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<td>2011</td>
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<td>Decision on three focus areas: Closing the Efficiency Gap, Restoring Value to Grasslands and From Waste to Worth.</td>
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<td>2013</td>
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<td>Ulaanbaatar, Mongolia</td>
<td>Livestock on the Move, GASL responses to the new dynamics livestock experiences in the global sustainability debate. Regional focus on mobile herding. Global focus on four sustainability domains derived from the 10th GFFA 2018</td>
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Kansas State University

Kansas State University (KSU/K-State) was founded in 1863 and has evolved into a modern institution of higher education with over 20,000 students. KSU’s college of agriculture has 200 teaching faculty members across nine departments ranging from agricultural economics to animal sciences and industry to grain science and agronomy. The university’s research is enhanced through the bio-research institute, the beef-cattle institute, the food science institute, the weed genomics research center, and others. In addition, the college of veterinary medicine is dedicated to the advancement of animal health and welfare, people, the environment and the veterinary profession. K-State also has international initiatives that address important needs at local, global and national level through specific labs and long-term activities in 18 different countries in Africa, Asia and South-America. The mission of KSU continues to evolve in the 21st century. Livestock production in Kansas is the largest contributor to the agricultural industry, representing farmers, ranchers and agribusiness across the state. K-State’s expertise in the livestock and animal sector makes the university uniquely qualified in the hosting and engaging in the 9th GASL Multistakeholder Partnership Meeting.

Innovation for Sustainable Livestock Systems

Demand for livestock products has grown rapidly in recent years, with rising populations, urbanization and growing wealth. To meet the rising demand, livestock agrifood systems are being transformed through combinations of expansion, intensification, structural transformation and increases in trade and movement of inputs, live animals and products. These changes have greatly increased production and productivity but also give rise to concerns about sustainability in a number of areas. Furthermore, the benefits and risks associated with livestock agrifood systems are highly context-specific, with diverse livestock agrifood systems playing different roles, facing different trajectories and posing different risks depending on their economic, social and environmental settings. Moving further towards sustainable livestock agrifood systems is complex because of this diversity and the many synergies and trade-offs across different domains. This calls for integrated solutions, new ideas and innovation, and firm commitment for action from all stakeholders. Impressive progress has been made in recent years: Innovations in breeding, feeding, health, welfare and husbandry more generally have greatly increased yields and the efficiency of production.

Innovation includes technical, institutional and policy aspects of bringing new approaches to bear on issues. The definition goes beyond the invention and development of technologies to include the capacity to innovate, the context in which innovation does or does not take place and the factors that facilitate or hinder innovation. This calls for multi-dimensional approaches to be taken through multi-stakeholder processes. The Global Agenda for Sustainable Livestock (GASL) is committed to take up this challenge and agree upon some concrete action that can be taken by stakeholder towards more sustainable livestock at the 9th Multistakeholder Partnership (MSP) meeting with the main theme of Innovation for sustainable livestock.
SCIENCE DAY

Introduction to the 9th GASL-Multistakeholder Partnership Meeting

Welcome to Kansas State University — Charles Taber, Provost, Kansas State University

Kansas State University Provost Charles Taber welcomed nearly 300 guests from 33 countries to the 9th Multi-Stakeholder Partnership Meeting of the Global Agenda for Sustainable Livestock on Monday morning in Forum Hall at the K-State Student Union. In his opening remarks, Taber noted the university was the first operational land-grant university in the United States and remains committed to serving Kansas’ 2.9 million residents and the world through learning, discovery and engagement. He thanks to have KSU selected as the host of this meeting and the unique opportunity to interact with the committed and diverse group of stakeholders.

Welcome to Kansas — Kelsey Olson, Deputy Secretary, Kansas Department of Agriculture

Kelsey Olson also welcomed the crowd of international visitors by citing the state’s long history as a hub of livestock production. From the territorial days in the 1800s, when cattle drives ran from Texas to the Kansas town of Abilene, now a short drive west from the conference site, livestock has always been a part of this state, Olson said. She noted the state’s dairy industry is the fastest growing in the nation, and the animal health corridor – which reaches from Manhattan through Kansas City to Columbia, Missouri – is home to 300 companies and a large contributor to the state and the industry. Developing innovative ways to contribute to sustainable livestock production is central to the state’s efforts.

Official Opening — Berhe Tekola, Director, Animal Production and Health Division, FAO

In officially opening the meeting, Berhe Tekola, director of the Animal Production and Health Division of the Food and Agriculture Organization of the United Nations (FAO), explained how GASL seeks to help achieve the UN’s Sustainable Development Goals of 2030. In particular, Tekola said much of FAO’s work on promoting sustainable agriculture, where livestock plays a vital role, applies to Goal 1 – no poverty; Goal 2 – zero hunger; and Goal 17 – partnerships for the goals. “Achieving sustainable food and agriculture requires dialogue and cooperation between all stakeholders: governments, private sector, NGOs, Research and Academia, Civil Society, community groups and donors.” To facilitate this, the Global Agenda for Sustainable Livestock was established upon the request of FAO’s Committee on Agriculture (COAG) in 2010. FAO is proud to host its secretariat and to contribute as a member.

Introduction of the Global Agenda — Fritz Schneider, Chair of GASL

GASL Chair, Fritz Schneider, ended the opening ceremony by first noting that this week’s conference is the first to be conducted in the United States and first to be organized in close collaboration with a university. He thanked the entire team of KSU and all sponsors to make this meeting possible. Schneider said innovation is crucial for a sustainable food system and that a central tenet for GASL is to support and magnify the work of its partners with a multistakeholder approach: “We advocate for conversation and change.”
Plenary Sessions on the four Sustainability Domains

The Global Agenda aligns its work with four overarching and interlocking “sustainability domains”, which were incepted at the 10th Global Forum for Food and Agriculture in Berlin, Germany 2018 and further adapted by GASL: food and nutrition security; livelihoods and economic growth; animal health and welfare; and climate and natural resource use. Each of these four topics was the focus of a series of expert presentations through the rest of the first day. Background papers to each topic were written prior to the meeting and discussed under different angles.

Food and Nutrition Security

| Session Facilitator: Donald Moore, Global Dairy Platform |
| Topic Overview: Geoffrey Dahl, University of Florida |
| Respondent: Tim Kurt, Foundation for Food and Agricultural Research |
| Innovation in Action: Chessa K. Lutter, University of Maryland |
| Innovation in Action: John Niemann, Cargill |
| Additional Perspective: Simplice Nouala, African Union Commission |

Geoffrey Dahl from the University of Florida opened the first session on Food and Nutrition Security and gave an overview of the topic. He cited the UN Committee on World Food Security, which defines Food Security as “the condition in which all people, at all times, have physical, social and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” Dahl said: “By increasing livestock production, particularly in developing and emerging economies, we will be able to improve food and nutritional security to future populations, and in particular, our interest is improving nutrition for vulnerable populations where it might have life-long impacts on their quality of life.”

As the respondent to the paper, Tim Kurt, Scientific Program Director of the Foundation for Food and Agricultural Research, highlighted that “the importance of animal sourced foods can’t be overstated.” Kurt’s foundation focuses on building private-public partnerships to support innovative science addressing today’s food and agriculture challenges. We need to produce more food in the next 30 years than in the last 10 000 years combined – animal systems have an important role in this. “Cross-sectoral improvement is key to improvement.”

Chessa Lutter, a nutrition researcher of the Division of Food Security and Agriculture at the University of Maryland, noted that proteins from animal-based foods are especially important for the development of the brain in young children. She is part of a team that has studied the effects of adding eggs to the diets of infants at 6 months of age. “Our work has found that eggs can provide more than 25 percent of the baby’s needs for energy, and the choline in eggs is extremely important for brain and cognitive development,” she said.
“Reducing livestock agriculture’s carbon footprint is something that farmers and ranchers wake up every day and think about,” said John Niemann, the president for Protein Ingredients and International at Cargill North America. “It’s good business for these farmers and ranchers to take care of their animals, and it’s good business to take care of the land.” He explained that there are places of efficiency and inefficiency. “The ideas in all of this is it that we share and collaborate and challenge each other to get better. Even if we are producing the world’s most efficient protein, we need to share those practices. We have to find ways to create a global system that’s efficient and at the same time produce a safe and affordable product.”

Simplice Nouala, Head of the Agriculture and Food Security Division of the African Union Commission, gave an additional perspective on the topic of Food and Nutrition Security. He started with the fact that of the total of 821 million undernourished people worldwide, over 257 million are in Africa. “We export a lot of money, we export jobs, just to feed our population – and despite this, we are not able to satisfy our population.” The continent is suffering because the agricultural sector is underdeveloped: There is low productivity, mainly for subsistence, a lack of product transformation, there are leakages such as post harvest losses, and there is a dependence on rain-fed agriculture. “We fail to look at food security in a more holistic manner.” Nouala emphasizes that market access as well as the policy and institutional environment are key for improvement and we also need to include issues such as gender and antimicrobial resistance. “Unsafe food is basically no food!” The fact that we have to transform agriculture needs some commitments that range from policies to resilience aspects and most importantly to mutual accountability to actions and results. Livestock transformation includes issues such as growth in terms of production and productivity, regional trade, ending hunger and malnutrition, poverty reduction and inclusive economic growth, addressing the challenges of land use efficiency and biodiversity loss, water and soil pollution, zoonotic diseases and more. Instead of addressing these issues in a fragmented manner, Nouala calls to start making holistic analysis.

Questions & discussion
The first question from the audience was related to the disease impact of animal production in different parts of the world – how to handle this, for example by moving the animals to other parts. Tim Kurt sees this strategy as an interesting concept to mitigate animal diseases. Certain breeds have evolved in certain regions and are adapted to those regions, which has implications to their efficiency and resilience to certain diseases.

To the question of plant-based vs. animal based food debate and how to bring some balance into this, John Nieman emphasized that this isn’t an either-or-conversation. From a global standpoint, it all matters. In some places, the basics of supply chains don’t make sense because the grain or the feed of the animals isn’t there. “We need to find the most efficient way to eliminate scarcity, and in some places we can do that with plant-based more efficient than with animal based foods – and in other places it’s the total opposite.” If we force upon the world that we have to eat eggs as our primary protein and it’s not
affordable, you create a financial issue. Additionally, it is important to learn where consumers are going. Geoffrey Dahl mainly saw the problem in education of parents on how to feed their children. Chessa Lutter agreed to this and highlighted again the importance of animal-sourced foods for pregnancy and lactation and for children under two years. Looking at Africa, the debate is imbalanced according to Simplice Nouala. The average consumption of meat is around 15-20kg per capita per year, but the problem is created elsewhere where the average consumption is around 100kg per capita per year. The debate in Africa is not how to reduce but how to create an average.

The last question was about selection techniques of breeding chicken in developing regions. Chessa Lutter answered that there is a lot of work going on to increase the egg production of chickens. But this involves also other inputs, such as vaccines, feed etc. You have to make sure that households have access to these inputs.

As closing remark, Simplice Noula mentioned again that we have to bring other protagonists at the table instead of speaking only to the “converted”. Especially monogastric producers in Africa need to talk with crop producers. “You can’t increase poultry production if you don’t increase maize and sorghum production.” This has to happen on policy level. John Niemann highlighted the sharing of practices and experiences to create a global system. Chessa Lutter reminded to improve efficiency to bring down costs and increase incomes, especially in rural areas and not only commercially on a macro level. She also emphasized the role of gender in all this, especially for women in poultry production and the role this has for their empowerment. Geoffrey Dahl encouraged the audience to talk with people and influence them about the importance of animal-sourced foods in their diet. “Without animal-source foods, we can create a diet that will fully support live, but with animal-sourced foods we can live more fully.”

Livelihoods and Economic Growth

“For most of us, if we only look back two generations in our families, we can find livestock production,” said Shirley Tarawali, Deputy Director of the International Livestock Research Institute, headquartered in Nairobi, Kenya. Tarawali recounted two trips to Nigeria, when she and her colleagues saw firsthand the economic impact of livestock production for the nation’s women. “We were not allowed to meet with them privately [on the first visit]; two years later, those women were raising animals, growing feed for animals, and they could meet with any visitors that we would bring along,” she said. The women were also keen to show off things like pasta makers and sewing machines — goods they had purchased through their own enterprise.
Jay Waldvogel focused on dairy production: “There are 1 billion people in the world touched by dairy, including farm workers, veterinarians, truck drivers, implement dealers, processors and more”. Jay Waldvogel was representing the Dairy Farmers of America and the key respondent to Tarawali’s paper. Dairy producers the world over are struggling to stay afloat, and sustainability is a key factor. Waldvogel’s own family dairy eventually fell into demise, and he cautions today’s producers to seek out innovation. “When you look at the future of dairy farming, you have to be realistic to what fits the needs,” he said. “What is sustainable [today] is not necessarily what your grandfather did. We have to consider the history, or how history will unfold.”

One example of innovation leading to sustainability and economic growth can be found among the small-stakeholder producers of India that is at the forefront in the fight against antimicrobial resistance. Nitya Sambamurti Ghotge, co-founder and director of ANTHRA, a non-governmental organization in India, works with small farmers, peasants, pastoralists and other small-scale livestock producers in India. ANTHRA’s board of directors is exclusively female, and Ghotge is one of the veterinarians who started the group in 1992. “Antimicrobial Resistance is a global problem,” Ghotge said, “contributing to loss to individual and global incomes.” Because traditional approaches to the problem proved too costly for poor farmers, Ghotge and ANTHRA had to innovate a new strategy to address the resistance problem: they used mobile technology to communicate with producers directly, and leveraged free, readily available indigenous plants, herbs and roots in place of costly medicines. “Several medicinal plants in India such as turmeric, holy basil and neem are well known to have antimicrobial properties,” Ghotge said. “Mastitis is a big problem in dairy cattle, especially cross bred cattle in India,” Ghotge continued. “We trained dairy farmers in simple but effective hygienic milking practices. We also advised them to feed their animals certain herbs such as Tinospora cordefolia and Asparagus racemosus root which are traditionally known to have antimicrobial properties.” The result: Farmers report a lower incidence of mastitis in their herds. Meanwhile, trials of the ANTHRA protocol have also been conducted in the Netherlands, with dairy farmers reporting good results. Ghotge sees this local strategy as a potential blueprint for the future of agriculture on a global scale. “Farming for too long has reputation as being back-breaking labour, with farmers perceived as socially backward, illiterate. I think if farming is to progress,” Ghotge said, “the image of farmers has to change. Farming needs to be progressive, looking into the future, with people who are feeding the world while helping other sectors, such as veterinary medicine and the environment. These are the images we need for the farming community.”

The additional perspective on the topic was given by Juan Jose Molina, a veterinarian and rancher who runs his family’s El Hatico Natural Reserve outside Cali, Colombia, and works as an associate researcher for CIPAV. El Hatico’s dairy production is using intensive Silvopastoral Systems and also produces sugarcane, both under agroecological principles and organically certified. “We try to unify livestock, agriculture and forestry in one system”, Molina said and continued, “This provides social, environmental and economical sustainability.” Shrubs and trees, grasses, leguminous and fodder plants serve for animal nutrition and complimentary uses. The system shows positive effects on soil recovery, climate change, biodiversity, animal welfare, social impact through employment and on quality products.
Molina concluded with the importance of agroecological production systems, which always contribute to more than one SDG at the same time.

Questions & discussion

Jay Waldvogel continued his thoughts about energy policy emphasizing that farmers can make energy with manure and can even gain more money out of this. Often they are penalized by the energy system, but “if you develop energy policies at scale in one market, they can then be downsized and used in others.” In the US, there already exist farms with 200 cows, which are successfully using these strategies. Regarding policies of carbon credits, he mentioned the example of net zero farms, which bears a lot of potential. “But it goes faster if you can make a value proposition for consumers, who are willing to pay more for carbon sequestration and sustainable farm management.” Instead of penalizing producers, they should be rewarded for these approaches. Concerning trade, Waldvogel emphasized the trade of technology, especially to developing markets to allow them building the infrastructure for processing and manufacturing equipment, which would speed up their industry.

Another question was directed to Shirley Tarawali regarding the investment in digital platforms, cellphones and internet, which decentivizes rural investment in dense populations – how to best address the building of digital infrastructure to support sustainable livestock production. Tarawali highlighted the advantage of engaging with marginalized people and different farmers to get rich data. This requires policy development in a much wider sector, not just agriculture.

Nitya Ghotge was asked on how to scale up the work of ANTHRA to a country level for all Indian farmers. Ghotge answered that different generations of farmers need to be trained constantly and continuously. It would be important for these practices to enter a veterinary curriculum. In many countries, phytotherapy is missing, there should be more respect given to this rather than having aggressive treatments for animals. Livestock policies in countries are supported by these kinds of initiatives.

Regarding silvopastoral systems, the audience wanted to know how to spread the systems so others will follow. Juan Jose Molina emphasized not only sustainable production but also economic benefits can convince others to take this opportunity. Jay Waldvogel highlighted the general challenge of how to convince people to become farmers: They have to see the future and opportunities in this job, “we haven’t been painting well enough these options that fit the farmers in the future.”

Continuing on this topic, the last questions was about how to have more youth in agriculture. Juan Jose Molina said that is important to share sustainable practices with young people and to value the “natural capital”, that means reducing the dependency of inputs and allow the system to be more profitable. By analyzing local conditions, young people see the potential in each region and can start seeing their own potential. Nitya Ghotge said that the problem lays in the bad picture people have of farmers, this narrative has to change into progressing, meaningful work that feeds the world and helps other sectors such as biodiversity, preserving the environment and more. Shirley Tarawali agreed and underlined again the opportunities of digital technology and niche and specialty products, which are becoming more of interest for consumers. There need to be thought given to credits, finance, access to land.
Ulf Magnusson, Professor of Animal Reproduction in the Department of Clinical Studies at the Swedish University of Agriculture Studies, introduced the topic of the session on animal health and welfare. He summarized the wide-ranging background paper that covers the challenges and innovations in five areas: impact of animal disease; zoonoses and pandemics; foodborne diseases; antimicrobial resistance; and animal welfare. “Animal welfare and productivity goes hand in hand,” Magnusson said.

To illustrate that point, several other experts took turns elaborating on the various aspects of the topic. Donald Hoenig, Senior Veterinary Advisor at American Humane, cited a comment from the white paper: “In several countries regulations about these aspects are not in place or there are no resources to enforce them.” Hoenig said, “This rings true” because brucellosis—which has been all but eliminated from domestic animal population in the United States since 1982, remains common in low-income countries. Likewise, every tanker truckload of milk has been monitored for antibiotic residues for the last 25 years in the U.S., but that is not the case in low-income countries. With regard to animal diseases, Hoenig told of his journey to the United Kingdom in 2001, when that nation was forced to cull thousands of cattle due to an outbreak of Foot and Mouth Disease. “It was the worst month of my career,” he said, “but it was also the best month of my career because it caused me to come back here and start to get involved in taking action on how we would do things differently.”

Taking action in a different way was the central focus of a presentation by Jim Mulhern, president and chief executive officer of the National Milk Producers Federation, as he described the 10-year history and impact of the Farmers Assuring Responsible Management (FARM). The grassroots initiative provides a framework for on-farm animal care, fosters continuous improvement, and focuses on science-based outcomes. “We are raising the bar, and industry has responded,” Mulhern said. FARM is the first animal welfare program to be certified by the International Organization for Standardization. It accounts for 98 percent of the U.S. milk supply in 49 states – up from 40 percent in 2014.

Next up was Armando Hoet, director of the Veterinary Public Health program at The Ohio State University, who provided a detailed case study in training local authorities to screen for antimicrobial resistance in livestock and eventually build out that capability to a nationwide system. Hoet explained how a two-week, intensive course in Columbus, Ohio, for representatives from 14 Caribbean and Central American countries led to a program that created “roadmaps” and “cookbooks” that could be adapted for each country’s specific circumstances and scaled up to ensure better animal and human health.
Lastly, Martin Barasa, regional head of programs for Veterinarians Without Borders Germany, who is based in Nairobi, provided an additional perspective about maintaining animal health in different sets of circumstances. He said disease prevention is not limited to food animals. In many African cities, stray dogs can spread rabies, so he and others have been working on providing vaccinations for strays in cities and informal urban settings. Regarding the meeting’s topic of innovation, specifically in production efficiencies in food systems, he asked “Is Africa being left behind?”, noting that animal health data is often unreliable even if it is accessible in many African countries. His other question was how to package simple messages for semi-literate producers in low- and middle-income countries so they can learn modern livestock practices and ensure health for themselves and their animals.

Questions & discussion
The first question from the audience was about potential actions to improve animal welfare but at the same time maintain productivity to respond to the increasing demand. Ulf Magnusson highlighted again that animal welfare, animal health, productivity and profitability – which is very dynamic and depends very much on policy the environment, tariffs and trade agreements and consumer pressure – goes hand in hand. Jim Mulhern continued that animal husbandry is the foundation of our industry. By animal disease prevention and high animal care, productivity improves and costs come down. This helps to sell animal care programmes. Don Hoenig related to the many oppositions in “good science” for example in vaccinations. “People don’t believe the science”, he said. Therefore, we have to engage the policy makers. Martin Barasa mentioned the gap that needs to be filled on how to package the take away messages of scientific outputs in a very simple way for producers at grassroots level who are usually barely literate.

To the question about the one-health approach, Armando Hoet reminded that a one-health approach is very important as well as having people from all sectors to work together.

As last statement, Hoenig mentioned the concept of “providing a good day for the animals that we are raising” because “at the end of the day we’re going to sacrifice and kill and eat them”. That’s the message for farmers to understand, not just to provide a good live but also provide a good ending.

Jim Mulhern highlighted the linkage between good animal husbandry and consumer’s requests. Experiences have showed that the future belongs to those producers who are willing to embrace change and engage in continuous improving, with the understanding that these investments pay off in terms of productivity. Resistance to change is one of the biggest challenges.

Armando Hoet’s message was that veterinarians have to produce the data for consumers, so they know what they are eating, also related to AMR. Following this statement, Martin Barasa said that veterinarians sometimes need antibiotics for diseases, but also bear the risk to create antimicrobial resistance. “As actors and players in the animal food chain and the food industry, we have a huge obligation to invest in good governance and antimicrobial stewardship to achieve a good balance.” Regarding welfare, in the African context the problem is often the lack of awareness. Therefore, he highlighted that it is necessary to invest in communication to target those people.
Climate and Natural Resource Use

**Session Facilitator:** Susan Metzger, Kansas State University  
**Topic Overview:** Henning Steinfeld, FAO  
**Respondent:** Ian McConnell, WWF International  
**Innovation in Action:** Tom Jones, Hy-Plains Feedyard LLC  
**Innovation in Action:** Walter Oyhantcabal, Government of Uruguay  
**Additional Perspective:** Mario Herrero, University of Queensland

“A growing number of countries have identified livestock as an important topic in larger climate discussions including the role of methane”, said Henning Steinfeld from the Food and Agriculture Organization of the United Nations. He noted that from smallholder farms, with just a few head of livestock, to intensive cattle feedlots with thousands of cattle, there’s a huge diversity with what resources are used. “Part of the discussion”, Steinfeld said, “should also be that many grasslands are healthier if they’re grazed and that domestic animals play a role”. He also highlighted that there is a growing move toward intensive livestock production, which offers greater efficiency but also challenges for the environment, such as the reliance on soy as a feed ingredient. According to Steinfeld, some of the innovations being explored are better efficiency in decreasing methane emission intensity; better use of nutrients, water and energy – “a nice synergy” – and the use of animal waste.

Ian McConnell from the World Wildlife Fund International offered a response. The WWF produces the “Living Planet Report” which he said shows the state of the planet is declining and that food production and particularly livestock are a large part of that decline. There’s a need to initially stop the decline of the climate, he said, noting that most of meat globally is produced in intensive systems, so that while there are gains in nutrition, there has been a net environmental loss. He encouraged delegates to “take ownership” of the challenges in livestock production and take the lead in coming up with solutions. “We have a large land footprint but it’s not always a degradation of land,” he said. “We need to redefine what our footprints are. We won’t solve it right away.” He added that waiting to be proactive could make the livestock sector vulnerable.

In an “Innovation in Action” segment, Tom Jones from Hy-Plains Feedyard in Montezuma, Kansas, gave examples of how an intensive operation with a capacity of 50,000 cattle is addressing environmental challenges. Hy-Plains has sharpened focus on water conservation in the last four years, including limited irrigation in its cropping systems. Through genetic selection it’s also choosing cattle that use feed more efficiently. Jones said the feedyard is changing traditional cattle feeding strategies by: communicating with producers about vaccination prior to when they enter the feedlot in order to reduce pharmaceuticals through the animal’s life; sorting and managing animals to target optimal finish time and end product specifications; use genetics to produce cattle that achieve the quality grade choice or higher; optimize land use to grow cattle heavier and more cost effective prior to arriving at the feedyard.
In another “Innovation in Action” presentation by Walter Oyhantcabal from the Ministry of Livestock Agriculture and Fisheries in Uruguay, Oyhantcabal said Uruguay’s economy is largely based on livestock and that most cattle are grass-fed. Uruguay’s government has implemented mandatory traceability of cattle, growth promotants are prohibited by law, and there is no change in land use (no deforestation). “However, almost 75% of greenhouse gas emissions come from agriculture, mostly livestock.” Government policies have set three targets: More food and fiber, less environmental footprint and mitigation of and adaptation to climate change. To achieve those, the country established a new paradigm to guide changes in the livestock sector to support economic, social, welfare, biodiversity, soil fertility, and the ecosystem. Uruguay is the first developing country to set mitigation targets in terms of emissions intensity in the beef sector, with goals of 33% less methane by 2030 unconditionally, compared with 1990, and 31% less nitrous oxide.

An additional perspective was provided by Mario Herrero from the Commonwealth Scientific and Industrial Research Organisation and University of Queensland who said, “We are reaching a global convergence on the need for more sustainable food production systems.” He cited a recent Lancet report on make fruits and vegetables the primary star of the plate. What’s feasible now, Herrero said, is disruptive innovation, some of which could be applied to the livestock sector, such as using plant substitutes, new feeds, algae, and microbial protein from sewage and waste as animal feed and among others possibilities. “It will be expensive at the beginning, but the prices will come down.”

Questions & discussion
Addressing livestock converted into a high-quality human food source, the audience asked about what the alternative could be to make biomass a part of the food system. Ian McConnell said that to a very large part of the biomass, there is no alternative – biomass going through an animal, is the most efficient way to put it into a food system. There is no technology yet to use grass for the food system. “The challenging part is the crops we grow and the opportunity costs: The land to grow this biomass could also be used for human food.” This issue needs to be more addressed. Mario Herrero added that one thing we know for sure, is that some of the pathways to use this biomass are not sound alternatives such as bioenergy production. This would be detriment for the human food systems. Henning Steinfeld agreed but brought some positive examples like no-tillage systems, using crop residues for cardboard, or leaving some biomass to let forests establish. The same counts for degraded pastures, biomass should be left there to stop degradation. He concluded that there is often no alternative use for this material but in some places there certainly is. The main thing is that “you need to exploit every option.”
**POLICY DAY**

**Tuesday**

**Introduction**

After some introductory information from Susan Metzger, Senior Executive Administrator to the Dean/Director of the College of Agriculture at KSU, the Chair of the Global Agenda, Fritz Schneider opened the day by highlighting the importance of policy debates and better policies to make the livestock sector more sustainable. The Policy Day included two innovation panels, one on innovation and the other one on trade. Before the panels, eight Action Network coordinators of GASL showed their innovation potential and how they were putting projects into action.

**Action Networks’ presentations on Innovation Highlights**

Eduardo Arce Diaz, the manager of GASL, introduced the session on Action Networks’ innovative highlights. He underlined the importance of Action Networks for the Global Agenda: “They are the technical arms of the initiative, they produce evidence, they test it and they show that good practices are key for good policies.”

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<th>CLOSING THE EFFICIENCY GAP</th>
<th>RESTORING VALUE TO GRASSLANDS</th>
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<td><strong>Ernesto Reyes</strong>&lt;br&gt;Livestock Manager International Institutions, Agribenchmark</td>
<td><strong>Liz Wedderburn</strong>&lt;br&gt;Assistant Research Director, AgResearch, New Zealand</td>
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<th>LIVESTOCK ENVIRONMENTAL ASSESSMENT AND PERFORMANCE PARTNERSHIP (LEAP)</th>
<th>GLOBAL NETWORK ON SILVOPASTORAL SYSTEMS</th>
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<td><strong>Caroline Emond</strong>&lt;br&gt;Chair of LEAP 2019</td>
<td><strong>Julian Chara</strong>&lt;br&gt;Research Coordinator, CIPAV</td>
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<th>DAIRY ASIA</th>
<th>LIVESTOCK ANTIMICROBIAL PARTNERSHIP (LAMP)</th>
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<td><strong>Brian Lindsay</strong>&lt;br&gt;Steering Committee Member</td>
<td><strong>Ulf Magnusson</strong>&lt;br&gt;Professor, Swedish University of Agricultural Sciences</td>
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<th>LIVESTOCK FOR SOCIAL DEVELOPMENT</th>
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<td><strong>Ernesto Reyes</strong>&lt;br&gt;Livestock Manager International Institutions, Agribenchmark</td>
<td><strong>Valentina Riva</strong>&lt;br&gt;Advocacy Manager, The Donkey Sanctuary</td>
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The eight Action Network representatives shared examples of implementation of activities and evidence of information exchange, including the following:

- Addressing challenges related to regional ownership and financial sustainability
- Evaluating the evidence of a positive causal relationship between ownership of dairy animals, dairy consumption, and child growth in low- and middle-income countries
- Promoting the use of common animal welfare indicators and sharing case studies for animal welfare and sustainability
- Measuring practice change and modelling sustainable livestock options and the adoption process
- Identifying sustainable cattle ranching options
- Sharing good practices for responsible use of antibiotics
- Creating constructive conversations to guide policy, identify shared solutions, educate, and lead to more integrative knowledge and consistency of the whole system

Summary and Reflections across the Four Sustainability Domains

**Allen Featherstone**, Professor and Head of Agricultural Economics at Kansas State University, summarized the most important topics and thoughts that were shared on the Science Day and presented them to the audience to create a connection to the Policy Day. He mentioned again challenges such as population growth and increased demand for livestock products as well as economic perspectives, exports and trade, and concluded with a look at plant based foods. He highlighted that “sustainability is a journey rather than a destination”.

Panel Discussion on the Role of Innovation in Sustainable Livestock Systems

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<th>Moderator</th>
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<td><strong>Panelists</strong></td>
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<td>Michelle Calvo-Lorenzo, Elanco</td>
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<td>Nicola Shadbolt, Massey University</td>
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<td>Nick Austin, Bill and Melinda Gates Foundation</td>
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<td>Scott Hutchins, USDA</td>
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<td>Eddie Pesantez, Ministry of Livestock Production, Ecuador</td>
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Like much of agriculture, the world’s livestock industry has seen its fair share of innovation over the past 20 years, dramatically changing the way ranchers and farmers raise their animals. The first panel discussion therefore was dedicated to innovation in sustainable livestock systems.

Sometimes innovation creates a “positive disruption”, according to a group of industry leaders. “The disruption that is on the horizon is real-time information,” said Nicola Shadbolt, professor of farm and agribusiness management at Massey University. “A rancher can get access to information that can help them make (an important) decision out on the farm; consumers have access to information when making a purchase. There is power in having real-time information.”

Panelist Scott Hutchins, Deputy Undersecretary of Research, Education and Economics for the U.S. Department of Agriculture, said some of the positive disruptions he’s seen in the livestock industry has focused on four themes: advanced genetics (such as gene editing and related technologies); digital agriculture; artificial intelligence (which is helping scientists find cures for disease more quickly); and new age whole farm management. “Innovations are helping to reduce complexity in the livestock industry,”
Hutchins said, noting an example of how herbicide tolerant crops have helped to simplify the process of weed control.

“You could call some innovations disruptive, but maybe it’s just bringing the technology from the ‘rich world’ into the smaller countries,” said Nick Austin, the director of agricultural development for the Bill and Melinda Gates Foundation. Technology, Austin notes, offers opportunities for small farmers to increase their productivity just as larger operations can. New tools and management practices benefit family farms just as well as they may benefit larger corporate farms.

Michelle Calvo-Lorenzo, Technical Consultant for animal well-being with Elanco Animal Health, said that people often think of the big breakthroughs in agriculture, such as data technology, artificial intelligence, genomics and biotechnology. “But the example I like to talk about is one of the great disruptors we see in livestock production, and it’s one of the oldest: manpower… our people. There is a wide range of cultures and religious views on our farms, and there are a lot of factors that make how we work together in this diverse world very complex.” Calvo-Lorenzo said managing the work force is “social technology,” noting that empowering and valuing workers has a positive effect on livestock “because the human-animal interaction is important to sustainability of the livestock industry.”

Eddie Pesantez, Undersecretary of Livestock Production in Ecuador, said that his country is hungry for innovation in all agricultural sectors. “With technology and research, we can target all of the things we need, and it’s a way to fight all of the diseases that we face.”

All of the panelists noted at some point that social media plays a big role in advancing the livestock industry in the United States and around the world.

Panel Discussion on the Role of Trade in Sustainable Livestock Systems

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<th>Moderator</th>
<th>Mike Matson, Kansas Farm Bureau</th>
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<td>Panelists</td>
<td>Tom Vilsack, US Dairy Export Council</td>
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<td>Marcelo Gonzalez, Ministry of Livestock, Paraguay</td>
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<td>Jean-Philippe Dop, World Organization for Animal Health (OIE)</td>
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<td>Ma Chuang, China Association of Animal Science and Veterinary Medicine (CAAV)</td>
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<td>Jason Hafemeister, USDA</td>
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The second panel discussion focused on trade - the first time in the nine-year history of GASL conferences that trade has been addressed in a formal way.

The meaning of the word “sustainability” in livestock production varies from person to person and country to country which adds a layer of difficulty when governments are negotiating trade agreements, according to Tom Vilsack, president of the U.S. Dairy Export Council and former U.S. Secretary of Agriculture. Governments have a role in creating the “rules of the road,” Vilsack said, and to help producers respond to circumstances. Consumers need to have a place to get trusted information, but there’s a lack of consensus about what “sustainability” means, he said, adding that the panelists who shared the stage with him might not even agree. “If we have a common definition and informed consumers, then it’s easier to negotiate
trade agreements,” he said and highlighted that sustainability includes environmental, social and an often forgotten element, economic sustainability. “We need all three.”

**Marcelo Gonzalez**, Vice Minister of Livestock, Paraguay agreed that sustainability will look different in different countries. Farmers want to make sure consumers recognize the activities involved in raising livestock in a sustainable way. For that reason, Paraguay is working toward better labeling for its beef product, which are mostly raised on pasture.

**Ma Chaung**, China Assn. of Animal Science and Veterinary Medicine and Beijing Boyar Communication Co., LTD said there’s a role for government to promote sustainability practices and that China has initiated supply side reforms to encourage sustainable production.

Trade is essential to sustainable outcomes, said **Jason Hafemeister**, U.S. Department of Agriculture Foreign Agricultural Service. Competition is good. It’s good for consumers to speak with their dollars but he warned against government “cramming certain things down people’s throats.”

“Sustainability should go hand in hand with negotiation,” Gonzalez said, adding that transparency and consumer education is also important. “Some car companies have said they won’t use leather because they don’t want to support an industry that’s not sustainable. They don’t realize they’re hurting farmers who are trying to produce in more sustainable ways.”

**Jean-Phillipe Dop** from the World Organization for Animal Health or the OIE said science is part of the solution, but science is not always easy for people to understand. He noted that 45 countries have been affected by African Swine Fever. “We need good science to control disease.” Different perspectives do not mean disagreement. It’s important to reach consensus. “Sustainability is a journey rather than a destination.”

“We have to produce more with less,” Hafemeister said, but warned that if productivity is driven by something other than consumer preferences, it can be captured by special interests. “We have a long way to go to get to consensus,” he said, adding “Once we define what’s virtuous we can either ban things or we can subsidize things. I’m more encouraged by subsidizing good practices.”

Vilsack said that agriculture can strive to replicate nature: “There is no waste in nature. We’re on the cusp, at least in the dairy industry, of having no waste. I think we can get to a net zero agriculture.”

The panelists acknowledged there are trade barriers, saying it’s important to work on vectors of disease, factors in climate change, communicating research to producers and the public, and streamlining government regulatory systems in order to improve response times.

“If we want to knock down barriers we need to make all players feel valued,” Gonzalez said. “Think ahead and have a plan that thinks beyond 10 or 20 years to be sustainable. Sometimes farmers are already doing what we want them to do, but consumers don’t know and the government doesn’t know.”
PARALLEL PROGRAMS

Parallel Program A: Innovations for Smallholders

Impacts of a Pay-It-Forward Livestock Transfer and Training Program in Rural Nepal

Sara Janzen, Kansas State University

Livestock transfer programs, which often include a training component, are one way NGOs and governments try to facilitate transitions out of poverty by providing access to productive assets and human capital. The project, presented by Sara Janzen, evaluated 3 year impacts of a livestock-based livelihoods program using a randomized control trial in Nepal. The program targeted women and employed self-help groups, livestock transfers, and trainings. The observations were a substantial behavioural change in livestock practices, herd size, and women’s control over production decisions as well as built-in spill over effects.

Equal access to technology and innovation across livestock systems: boosting sustainable rural livelihoods and economic growth

Simplice Nouala, African Union Commission; Berhe Tekola and Francesca Distefano, FAO; Pierre Ferrari, Heifer International

The panel was opened by Francesca Distefano providing an introduction on the importance of integrating gender into livestock innovation and technologies. Women make up a staggering proportion of smallholder farmers globally who heavily rely on livestock management for their livelihoods and their food and nutrition security. The panel discussion was continued by Berhe Tekola, who discussed the importance of technologies and innovations for women’s empowerment in the context of animal health, and highlighted the need to increase equal access to disease surveillance technologies and practices. IFAD followed represented by Antonio Rota, who shared the organization’s programmatic work on women’s business groups and entrepreneurship development in the livestock sector in Tajikistan and Rwanda. IFAD currently looks at new business models, exploring market niches and developing innovative working set-ups and arrangements for women engaged in the projects. Karen Marshall from ILRI continued the panel discussion by presenting ILRI’s new vaccinations programme, which aims at increasing animal health knowledge of women smallholder farmers. Simplice Nouala then took the floor and talked about the importance of innovative policy solutions and strategic commitments at regional level, highlighting the African Union commitment to improve equal access to innovation for the transformation of Africa’s agriculture sector. Finally, Pierre Ferrari of Heifer International discussed the hub model with dairy farmers in East Africa and the innovations provided to farmers which have had a great impact of gender quality in the sector within the areas targeted by the project activities.

Connecting nomadic camel milk producers to supermarkets in Indian metros: lessons learned

Ilse Kohler-Rollefson, Camel Charisma

The presentation of Ilse Kohler-Rollefson and Camel Charisma described the journey of Camel Charisma, a social enterprise set up to support Rajasthan’s traditional camel nomads with product development and marketing. Products include dairy (milk, smoothies, cheese), and non-dairy. Innovative aspects relate to explicitly supporting a nomadic system, putting in place a traceability mechanism, imposing animal welfare standards (no separation of mother and calf), and deep freezing the milk to increase its shelf life to 3 months. The system creates significant income for camel breeders, immediately reviving camel numbers. It benefits autistic children who respond favourably to camel milk. Importantly, the camel milk is produced from natural biodiverse vegetation (“36 plants” according to local knowledge) and crop by-products, without any use of fossil fuels. From the climate perspective, it is to be noted that camels also have lower methane emissions than other ruminants and are best adapted to the rapidly rising temperatures in Northern India.

Innovation awareness raising campaign towards SDG2

Catherine Marguerat, Food Forever Initiative; Jeannette Beranger, The Livestock Conservancy

The Food Forever Initiative (FFI) is a public awareness and action campaign that brings together leaders within the agricultural, scientific, and culinary sectors to collectively contribute to the implementation of the UN’s Sustainable Development Goal (SDG), Target 2.5, known as “the goal of zero hunger.” This goal is to safeguard and share the remaining “genetic biodiversity” of both crops and livestock, which are crucially interdependent upon each other. Agrobiodiversity is a key component to achieve food
security and improve nutrition for all, especially in challenging environments and climates. The initiative’s goals are to first raise public awareness on the fundamental importance of crop and livestock diversity while taking substantive action among its partners in order to secure it. The effort creates compelling messages by implementing science-based communication campaigns and publishing success stories and cases. The Livestock Conservancy (Pittsboro) and FFI presented successful campaigns.

Parallel Program B: Livestock Research Methodology

Proper design and conducting of livestock and field research and demonstration

Mike Tokach, Kansas State University; Joel DeRouchey, Kansas State University; Barry Bradford, Kansas State University

Applied field research and demonstrations on stakeholder farms are a cornerstone of livestock research at Kansas State University. Field research adds credibility by involving real-world disease, environment, and economic pressures. Student involvement builds communication, data management, and livestock care skills. Keys to successful field research includes selecting the right farmers, asking relevant questions, applying the same research rigor as experiments conducted at university campuses, continual oversight of data collection and analysis, and rapid dissemination of results. Difficulties include distance to farms, protocol compliance, communication of problems, and economic realities versus research needs. Successful field research drives our outreach programs.

Livestock, human welfare, and sustainability: the challenge of harmonizing farmer interview data from 30+ countries and conducting coherent analyses

Jim Hammond, International Livestock Research Institute (ILRI)

Farmer surveys are widely conducted, but it is difficult to pool data and identify common trends. The Rural Household Multi-Indicator Survey (RHoMIS, www.rhomis.org) aims to generate coherent data from smallholder farms in lower- and middle-income countries, and since 2015 has collected more than 25,000 interviews in 31 countries. This uptake demonstrates the feasibility of using a standardised survey instrument in a wide variety of projects and locations. But pooling data from so many different projects presents challenges for analysis. Biases due to different sampling strategies must be overcome, and confounding factors at various levels accounted for. ILRI has begun to disentangle results which are valid across many locations, and results which are mediated by location. Topics include trade-offs between commercialisation, gender equity, and food security; and the contribution of animal sourced foods to nutrition along a market access gradient.

Parallel Program C: Dairy

Contributions of dairy products to environmental impacts and nutritional supplies from United States agriculture

Mary Beth Hall, Innovation Center for US Dairy

In the presented study, several scenarios were used to model the human nutrition and environmental implications of removing dairy cattle from the US food production system to reflect different sets of assumptions for how this would be accomplished. Scenarios differed in the ways land previously used to grow feed for dairy cows would be repurposed. This presentation will address the impacts to the supply of nutrients for human consumption as well as the scale of greenhouse reductions, if any, from these scenarios.

Determinants for Dairy Farmer Decision-Making on Manure Management Strategies

Meredith Niles, Innovation Center for US Dairy

Despite a growing body of technical and agronomical-focused research, there has been far less research on farmer decision-making and adoption of manure management strategies (MMS). The session presented the results of a systematic literature review of peer-reviewed articles exploring the drivers of farmer adoption and decision-making related to MMS. It focused on high-income countries, where MMS strategies are more diverse and often involve advanced technologies. The results suggest a clear pathway for future research to better understand the factors that influence dairy farmer decision-making as it relates to MMS.
US Dairy Coordinated Agricultural Projects Overview and Projects
Matt Ruark, Innovation Center for US Dairy

The Sustainable Dairy Project is one of several United States Department of Agriculture (USDA) - National Institute for Food and Agriculture (NIFA), Coordinated Agricultural Projects (CAP). CAP awards support large-scale projects in order to promote collaboration, open communication, and the exchange of information; reduce duplication of effort; and coordinate activities among individuals, institutions, states, and regions. Team participants conducted targeted research, education, and extension in the area of climate change adaptation and mitigation efforts in dairy production systems of the Great Lakes region. The project team also collaborates with and is supported by the Innovation Center for US Dairy. As part of their sustainability efforts, the US Dairy industry has committed to reduce its greenhouse gas emissions by 25% by the year 2020.

Lifetime performance is key to sustainable dairy production
Irmgard Immig, DSM

The profitability and sustainability of dairy farming depends on lifetime performance. More than 80% of dairy cows are culled too early in life because their feed does not match their nutrient requirements. Reproductive performance is declining globally by 1% a year, significantly impacting the sustainability of the dairy sector. The inclusion of micronutrients and specific feed additives in ruminant diets can increase longevity, improve animal welfare, and reduce the environmental impact of dairy farming. Improvements to the diet must take into account a range of factors. These include redox balance; skeletal development; nutrient utilization, and sustainability considerations – which translates to rearing ruminants without antibiotics, mitigating methane emissions and reducing the overall environmental footprint associated with ruminant production.

Parallel Program D: Tools and Frameworks
The long-term challenges for livestock sustainability. What policy and institutional innovations?
Ugo Pica-Ciamarra, FAO

The key messages presented in this session were: Africa and its livestock sector are anticipated to dramatically change in the coming decades; the transformation of livestock will pose huge challenges to society; policy and institutional innovations are key for a sustainable transformation of the livestock sector.

CFRSL: Common Framework of Reference for Sustainable Livestock An Integrative Approach to Measuring Sustainability
Erika Andrea Angarita Amaya, Thuenen Institute and Alexander von Humboldt Foundation

Sustainable Livestock (SL) is a concept and practice best known and used by producers, multi-stakeholders and policy makers in recent years. Currently the challenge is how to measure and compare their results and impacts when production systems are diverse, variable, dynamic and complex. A Common Reference Framework for Sustainable Livestock (CFRSL) is an international standard that defines the principles and competencies needed to achieve sustainability goals at levels from basic (A1) to advanced (C2), supported by evidence and environmental, economic and social indicators. The framework is dynamic and integrative and allows various stakeholders to measure in a transparent, coherent, equivalent and comprehensive way the impacts of their actions at different scales and contexts facilitating global comparisons while respecting local particularities.

The Manure Challenge: An Expedited Pathway to Circular Farm Systems
Connie Bowen, The Yield Lab Institute

The Manure Challenge – organized by Yield Lab Institute, with formation advise from World Wildlife Fund, Newtrient, and the Dairy Farmers of America – brings together the expertise of public, private, and non-profit groups to drive interest in and investment towards manure management technologies. The Manure Challenge is a start-up competition that will provide mentorship, guidance, and networking to 6-10 manure management technology providers.
Supporting Innovations for Sustainable Livestock in Smallholder Livestock Systems: Perspectives from the NGO Cluster
Margherita Gomarasca, VSF International

The NGO Cluster of the Global Agenda presented its views on the role of innovations for sustainable small-scale livestock farming and pastoralism, focusing especially on the Global South. The session was the occasion to launch the policy brief on smallholder livestock systems and innovations for sustainability, which the NGO Cluster prepared for the 9th MSP Meeting. The presentation also included some examples from successful projects that contain innovative approaches to address the SDGs.

Parallel Program E: GASL Action Networks
Closing Efficiency Gap
Ernesto Reyes, Agribenchmark

Following latest developments of the Efficiency Matrix, the agri benchmark network is proposing a methodological approach for modelling baseline, and sustainable livestock options' scenarios (adopting period), measuring livestock efficiency and production systems economics.

Livestock for Social Development
Ernesto Reyes, Agribenchmark

Frequently, livestock small farmers are not properly considered and, or, invisible, regarding the role they can play in providing food security, generating income, and building up resilience. The Action Networks proposed major components of a platform for sharing and compiling expertise, better practices and lessons learnt from livestock development projects.

Livestock Antimicrobial Partnership (LAMP)
Ulf Magnusson, Swedish University of Agricultural Science

LAMP presented compilations of good practices for prudent and medically rational use of antibiotics that have been used in different farming systems.

Livestock Environmental Assessment and Performance (LEAP)
Camillo De Camillis, FAO

Camillo de Camillis present the road testing of LEAP guidelines, core of LEAP's work programme 2019-2021, which aims to generate evidence for better environmental management. Due to the increase of environmental assessment methods and the lack of global harmonization, many of the discussions on livestock production are focused on its environmental and social impacts. However, the effects can be positive or negative. Sustainable management and use of natural resources are essential to improve livestock production. Environmental management for replication is also part of the solution. The road testing of LEAP guidelines represents an opportunity to demonstrate the potential of feed and livestock supply chains at various scales; and to accelerate the implementation of best practices across the sector.

Parallel Program F: Land Management and Biodiversity
New directions for silvopasture research at the center for agroforestry
Ashley Conway, Sarah Lovell, Michael Gold, University of Missouri

The Center for Agroforestry at University of Missouri is committed to studying new methods of integrating tree plantings with livestock pastures (silvopasture) or holding areas (windbreaks) to improve the health of the animals and the environment. Future research at the Center will assess animal behavior, physiological responses, and performance in pastures that contain trees, compared with those absent the protective tree cover. These benefits could have important implications for animal welfare and public perceptions of livestock keeping. Certain varieties of trees can also provide nutritional resources for the animals through fruits, nuts, or fodder. In addition to the benefits
for livestock, the environmental health of these systems will be evaluated based on the extent to which trees increase carbon sequestration, nutrient cycling, and soil health. Silvopastoral systems will be framed as a multifunctional landscape solution for agroecosystems of the Midwest US.

**Sustainable rangeland management in sub-Saharan Africa Guidelines to good practice**

*Tobias Feldt, GIZ*

The vast rangelands in sub-Saharan Africa are often characterized by an adverse perception: it focuses on overgrazing, herds of undernourished livestock, erosion and desertification, drought, famine, and conflict. A new publication aims to reconsider and to revise this largely negative view. It shows how local people, often supported by enlightened projects and new government legislation, are coping with unprecedented challenges. By illustrating a wide range of proven and innovative land management practices and their impacts on ecosystem services and human wellbeing, the guidelines contribute to a better understanding and differentiation of these systems, their specific challenges and solutions.

**Veterinarians and farmers pilot Natural Livestock Farming 5-layered strategy for improved cattle health, milk quality and biodiversity**

*Katrien van’t Hooft, Getachew Gebry, and Elizabeth Katushabe – NLF*

Natural Livestock Farming (NLF) is about improved health of cattle, soils and environment and it focuses on disease prevention rather than cure. The main goal is the reduced use of antibiotics and other chemicals, thus resulting in residue-free products, good income for farmers, and improved biodiversity. If no actions are taken on the reduction of Antibiotics and chemicals, then antibiotics will no longer be effective for humans and animals alike plus dairy markets can collapse in countries with insufficient control of residues (antibiotics, acaricides, aflatoxines, dewormers, hydrogen peroxide etc) in milk. Efforts are underway at present through natural livestock farming by forging International collaboration with scientists from Netherlands, India, Ethiopia and Uganda; and by combining knowledge from different backgrounds to develop practical innovations, and through fostering interaction between farmers, veterinarians and other livestock professionals. The outcome of the long term collaboration was presented at this side event. The focus of engagement is a reduction of antibiotics in the Netherlands, Ethiopia, and India, whereas Uganda aims at the reduction acaricides. Future activities of the NLF international network include expanding pilots with NLF strategy on critical animal health issues; documentation of outcomes; International exchange and training programs; expand network to other countries. The long-term vision is setting up an international NLF Academy.

**Parallel Program G: Measuring Impact**

**Piloting a smallholder broiler production model for increased income and improved nutrition in Musanze, Rwanda**

*Tom Gill, University of Tennessee*

To meet the dietary demands of Rwanda’s rapidly rising population, there is a need to increase the sustainable supply of quality animal-sourced protein. Tworore Inkoko, Twunguke (“Let’s raise chickens and make a profit”) is a University of Tennessee-led public-private partnership to support sustainable intensive broiler production for smallholder farmers in northern Rwanda. Dual goals include: (a) increasing incomes of rural smallholder households and (b) improving household nutrition outcomes through the consumption of chicken meat. Using an innovative private-sector-based train-the-trainer approach, the project has to-date trained 414 (from an overall target of 750) smallholder farmers utilizing a 100-bird model. After 18 months of production, flock data shows average livability of 91%, average profit margins of $54 per 6-week flock, and a tripling of consumption of chicken meat by participating households. Lessons learned from the rollout of this pilot project will inform scale-up of smallholder broiler production across Rwanda and the region.

**Livestockdata.org – Improving the consumption of livestock data**

*Gareth Salmon and Karen Smyth, Supporting Evidence-based Interventions (SEBI), The University of Edinburgh*
Despite the importance of livestock in sustainable futures, sparse and disparate livestock data from Low- and Middle-Income Countries limits innovation and impairs development investments. Decision makers need data that is accessible and fit for purpose. To help close the data gap, the Livestock Data for Decisions (LD4D) community of practice is building the livestockdata.org website as a central, neutral, open access repository for evidence generated by the community. Since 2017, LD4D has convened livestock data stakeholders (including academia, NGOs, donor agencies and industry) to tackle shared data challenges, and drive informed livestock decision-making through better consumption of existing and novel data.

**Indicators for Land and Food Competition in Dairy Production: Development and Test of Two Methods**

**Beat Reidy, Bern University**

Ruminants are able to convert feed sources not directly usable by humans into valuable human-edible food. If, however, ruminants are fed with feedstuff that could have been consumed directly as food by humans (i.e. cereals), or which is produced on land which could be used to grow arable crops for direct human consumption, competition between feed production for ruminants and food production for human arises. The paper presents two newly developed indicators determining the feed-food competition of dairy production in terms of energy and protein supply for humans.

**Measuring to Manage**

**Brian Lindsay, Dairy Sustainability Framework**

The Dairy Sustainability Framework (DSF) is the dairy sectors efforts in enhancing the sustainability of production globally. The Framework currently accounts for some 30% of global milk production and is a total value chain initiative that is inclusive, pre-competitive and collaborative, encouraging members to share challenges and potential solutions with fellow members. The DSF has just completed a three year process of developing with its membership, high level indicator metrics for each of the 11 DSF sustainability criteria. These indicator metrics will enable the sector to track and publically report its global aggregate progress over time. The session described the journey and process of consultative indicator development and the importance of implementation and reporting for the sector.

**Parallel Program H: Private Sector Engagement**

**How can Agricultural Development Practitioners Stimulate Livestock Productivity by Engaging with the Private Sector?**

**Christopher Brett, World Bank Group**

How can Pay-for-Results prize competitions engage the private sector to overcome global and regional challenges to livestock productivity? This presentation introduced AgResults’ framework, which uses prize competitions to encourage the private sector to overcome market challenges. The World Bank and AgResults Secretariat shared lessons from designing and implementing competitions to strengthen livestock health and productivity: a global Brucellosis vaccine competition, a vaccine competition to address Foot and Mouth Disease in Eastern Africa, and a Tanzania-based competition to boost dairy productivity. By sharing learning and recommendations, World Bank/AgResults showed how leveraging private sector innovation can transform livelihoods and create economic growth.

**Improving collaboration between research and private sector to get sustainable livestock innovation into use**

**Shirley Tarawali and Tom Randolph – ILRI**

The world’s cows, sheep, goats, pigs, poultry and other farm animals are the mainstay of sustainable livelihoods across the developing world. The energy and nutrient-dense milk, meat and eggs these animals produce provide people with basic livelihoods, incomes, food and nutrition. Yet, the hard evidence behind these statements is scattered and recommendations are complex due to the multiple roles livestock play in development. As part of a wider effort bringing together evidence showing why investment in sustainable livestock development is necessary, ILRI asked projects to share ‘change stories’ showing how their innovative livestock interventions are making a positive difference to the lives and livelihoods of people in developing countries.
Parallel Program I: Biosecurity and Traceability

Sustainability in Action—A real world approach to sustainable beef production
Deke Alkire, Noble Research Institute

The aim of the Integrity Beef Sustainability Pilot Project is to improve the sustainability of the entire beef production value chain and act as a model for the U.S. beef industry. In this two-year project, cattle were managed in alignment with the U.S. Roundtable for Sustainable Beef metrics and indicators, engaging the full beef supply chain and exploring scalable solutions that could be applicable for beef producers across the country. Cattle were tracked from birth to plate, allowing for data collection across the entire life of the animal. Managing calves sustainably from birth to plate resulted in similar or improved animal and carcass performance without substantially decreasing profitability.

Economics of Biosecurity Effort by U.S. Swine and Cattle Producers
Glynn Tonsor, Kansas State University; Lee Schultz, Iowa State University

Attendees gained a summary of recent USDA grant supported work on how U.S. swine and beef-cattle producers make decisions regarding biosecurity investments. These investments are essential to proactively mitigating livestock disease risk and assisting with security of production and associated economic vitality both domestically and abroad. Results from nationwide surveys and economic experiments conducted with U.S. producers were shared and formed the basis for interactive discussion with attendees.

Parallel Program J: GASL Action Networks

Animal Welfare
Caroline Emond, International Dairy Federation; Valentina Riva, The Donkey Sanctuary

Both the International Dairy Federation (IDF) and the Donkey Sanctuary have been developing case studies and taking dairy cows and working equids respectively. IDF presented a collection of case studies on animal welfare across the industry from large to small scale producers. The Donkey Sanctuary presented some practical training and community education initiatives aimed at improving the welfare of working equids. One of their recent activities was hosting an OIE Focal Point Regional Seminar in Lesotho with other members from the International Coalition for Working Equids.

Restoring Value to Grasslands
Liz Wedderburn, AgResearch

The presentation was about the multiple values farmers and other stakeholders perceive that they attain from grassland grazing systems. Liz Wedderburn presented a tool that makes transparent these values and enables the impact of policies to be assessed across multiple values. Cases that demonstrate how knowledge of the multiple values generated from grassland systems are used by farmers, researchers and agribusiness.

Dairy Asia
Meenesh Shah, National Dairy Development; Tsetsgee Ser-Od, Ministry of Food, Agriculture, and Light Industry

The presentation included: a general background of conditions in Mongolia; steps to build a small scale rural cheese factory using dairy equipment (India) along with necessary cheese technologies adaptation, testing and choosing recipes (Tilzit, Gruyere, Cheddar, Mozzarella cheese based on yak milk); the process of quality milk collection from herder groups as well as quality issues; results on cheese branding and marketing niches at the domestic market along with potentials for export; and the potential for application of this business model in other Asian countries (e.g. Mountainous areas in Tibet, Inner Mongolia of China, in Nepal, in Tajikistan).

Global Network on Silvopastoral Systems
Julian Chara, CIPAV

In several parts of the world, the introduction and management of trees and shrubs have played an important role in the development of integrated cattle production. Silvopastoral systems (SPS), defined as the intentional integration of livestock, trees, shrubs and grasses on the same land unit (Jose et al. 2017) provide benefits for the production and the environment by optimizing the interaction between the components. This work analyzes three successful stories
from Australia and America where silvopastoral systems have been promoted with important results in productivity and reduction of the carbon footprint. The analysis included strategies used to promote the systems, the main productive achievements, their impact on natural resource use and GHG emissions, and the implications for public policy.
FIELD TOURS

Field Tour A – Livestock and Environment

- Tiffany Cattle Company, Herington
- Konza Prairie Biological Station
- Ashland Bottoms Research Farm
Field Tour B – Animal Health & Welfare & Antimicrobial Resistance

- K-State Veterinary Diagnostic Lab
- Manhattan Commission Company
- Biosecurity Research Institute
- Call Hall (Dairy bar, DeLeval Robotic Milker)
Field Tour C – Kansas State Fair
Field Tour D – Livestock Agrifood Systems, from Farm to Fork

- Hildebrand Dairy
- Alma Creamery, Wamego KS
- Plumlee Bison Ranch
ACTION DAY

Introduction
The Action Day was opened by Susan Metzger and Eduardo Arce Diaz. The idea of this day’s programme was to use information and insights gained from Monday’s and Tuesday’s science and policy presentations and debates to identify concrete steps that can be taken by GASL Clusters, Action Networks and all stakeholders in support of the proposed actions and innovations.

Roundtable Plenary Results
The five cluster groups were invited to share their discussion outcomes with focus on reflections, learnings and conclusions of the Science Day; of the panel discussions; and the implementations for the future of livestock systems regarding the use of innovations. The following tables summarize the presented outcomes.

Public Sector and Donors

<table>
<thead>
<tr>
<th>Science Day</th>
<th>Panel Discussions</th>
<th>Future</th>
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</thead>
<tbody>
<tr>
<td>• Integration of different dimensions and development of an integrated approach, which enable renewal of opportunities (technology, innovation...) and reinforce science</td>
<td>• Levels of standards seem too high for some countries compared to global requirements → depends on each country capacity (AIT, traceability, preventing measures...), high-tech...</td>
<td>• Livestock must be nature &amp; community smart and be seen in a wider food system. The food system should be integrated in a circular bio economy</td>
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<tr>
<td>• Beef debates is in the focus, but systems should be looked as a whole, integrating crop production, poultry, pigs...</td>
<td>• Find out incentives and policy tools that can help</td>
<td>• Support long-term efforts. 3 solutions proposed: close efficiency gap, efficiency of resources, restoring grassland value;</td>
</tr>
<tr>
<td>• What is innovation? Not only high-tech, also low-tech, social and not only technological</td>
<td>• Implementation of policies is key; governance important</td>
<td>• Quantity &amp; quality of data / measurements / tools to solve problems: results from AN, LEAP guidelines, GLEAM results...</td>
</tr>
<tr>
<td>• Do we measure the right things and collect correct data? GHG/unit of food; nutritional value/unit of land?</td>
<td>• Communication in addition to policies</td>
<td>• What does livestock bring to community? Need to produce key messages. Role to play for GASL (« Why livestock matters)?</td>
</tr>
</tbody>
</table>
| • Linkages between livestock and antimicrobial issues are becoming more and more important → e.g. increasing resistance through genetic approach, using plant-based treatments with success... | • Emphasis on consumers wishes (behaviour and trade) and need to develop scientific-based standards | • GHG + positive impacts & services from livestock, including economic aspects must be taken into account → need to develop a vision based on SDGs (e.g. no conversion, gender balance, GHG decrease, low carbon emissions...)
| • How livestock support resiliency? Productivity is increasing, but environmental impacts too; | • Africa will be the next focal point: opening regional markets, increase level of infrastructures, fight against poverty, investment on poultry... → biosecurity risk increases accordingly | |
### Private Sector

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<thead>
<tr>
<th>Science Day</th>
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</thead>
<tbody>
<tr>
<td>• Showcasing science-in-practice examples and studies would help bring learnings to life</td>
<td>• Provide insight on how to speed innovation passage and adoption: How can government be more innovation-friendly? How do you increase adoption and promotion of innovations?</td>
<td>To ensure a thriving, innovative, and sustainable future where nutritional security, animal care, environmental resource management, and socio-economic (including farmer) benefits are fulfilled, the sector envisions:</td>
</tr>
<tr>
<td>• More depth on Carbon Sequestration would be valuable</td>
<td>• Opportunity to include communications and consumer engagement in the conversation and action plan</td>
<td>• An engaged, robust private sector helping bring farmer/rancher/producer voices to the forefront in communications and research</td>
</tr>
<tr>
<td>• Risk of being caught in a narrow focus on Climate and Resource Use: not as holistic as other sessions; would have valued discussion/rebuttal time; need to identify true costs, particularly re: diet and deliberative nutrition, a low-GHG diet or low-water diet is not necessarily a sustainable diet; need balance and rigor in what is shared to ensure comprehensive reports and new knowledge are highlighted</td>
<td>• Identify and set action items and next steps in the conversation re: policy and innovation</td>
<td>• Enhanced multi-stakeholder projects where we work together – with farmers/ranchers at the heart – to align policies with science and innovation needs to attract public and private investments: Infrastructure; livestock production; livestock processing</td>
</tr>
<tr>
<td>• Recognized the disconnect between the needs and realities of the field/markets and the science and innovation offered</td>
<td></td>
<td>• All stakeholders championing and contributing to investments in science and infrastructure around the world to ensure sustainable livestock production able to meet growing demands</td>
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### Academia/Research

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<thead>
<tr>
<th>Science Day</th>
<th>Panel Discussions</th>
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</thead>
<tbody>
<tr>
<td><strong>Innovation:</strong></td>
<td>• Compliance issue: norms, values vary according to cultural backgrounds</td>
<td>• Variety of systems will remain according to country aspects (e.g. climate etc.)</td>
</tr>
<tr>
<td>• Is not only a technology, but a system innovation (holistic view)</td>
<td>• Huge variety of policies driven by politics!</td>
<td>• Question of efficiency will be crucial (also because consumers not necessarily push for efficient systems)</td>
</tr>
<tr>
<td>• Innovation goes at different speeds, with consumers often being ahead and producers “lagging” behind → need time to align</td>
<td>• Who follows who? currently consumers’ driven</td>
<td></td>
</tr>
<tr>
<td>• How to foster innovation rather than to control it?</td>
<td>• Gap between policy makers &amp; field practitioners</td>
<td></td>
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</tbody>
</table>
- How to achieve scalability?
- Few innovations in livestock systems
- Innovation is going on from farmer to farmer network

Research:
- Missing from the conversation: how to design research to capture social dimensions
- Traditional knowledge needs to be captured and considered, but needs scientific research as well
- Measurement of efficiency: need to use more adapted indicators to capture the diversity of systems
- Invest in researchers!

Extension:
- How to communicate research to the media?
- Increasing need to educate consumers about agriculture & livestock
- Where are the producers/farmers a) in GASL, b) at this MSP?
- Where are the consumers?

- Research not designed to bring facts & information for policy makers
- Need to translate research/science results into practice for policy makers: breaking silos between researchers and policy makers (e.g. in New Zealand and SLU course)
- How to bring messages to media? Currently: larger gap between research and media than between research and policy makers

Non-Governmental Organizations (NGOs) and Social Movements

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<thead>
<tr>
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<tbody>
<tr>
<td>Contributions of livestock systems to 4 sustainability domains, but not much new evidence/debate, need to move beyond rehashing the issues</td>
<td>Once a new technology/innovation is developed, its adoption is not for granted! More emphasis needed on this aspect (participatory processes; adaptation to local context, not just replication)</td>
<td>Diverse</td>
</tr>
<tr>
<td>Too much defensive discourse, lack of genuine self-reflection, analysis</td>
<td>Gender bias in trade panel, and lack of gender aspects in policies</td>
<td>Change will be context specific</td>
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<tr>
<td>Not talking about diversity within livestock</td>
<td>Recognition that trade is part of the solution, but how to make it sustainable for all livestock systems?</td>
<td>Traditional breeds part of the solution (resistance)</td>
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<tr>
<td>Much focus on challenges but not too much on solutions appropriate to different livestock systems</td>
<td>Local trade and local markets not discussed enough</td>
<td>Participation of women and youth</td>
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<tr>
<td>No visibility to smallholder livestock systems and innovations</td>
<td></td>
<td>Drivers:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Science support</td>
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<td></td>
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<td>- Policy support</td>
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<td></td>
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<td>- Access to information</td>
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<td></td>
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<td>- Correct implementation of innovations</td>
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<tr>
<td></td>
<td></td>
<td>- Competition for land and natural resources</td>
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<td></td>
<td></td>
<td>- Climate change</td>
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<tr>
<td></td>
<td></td>
<td>- Veganism, plant based proteins and food innovations</td>
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</table>
Little mention of SDGs, despite the urgent deadlines and agenda
- Missing examples of innovations BY farmers (we could learn from adaptation and innovation capacities of smallholders, pastoralists...)
- Over focus on innovation as ICT/technology. Stress also importance of innovative set-ups, structures, governance systems, etc.
- Inequalities between countries in accessing international trade (diseases, standards)
- Need to set goals and be accountable: Strong and clear statements and agreements on policy recommendations that can drive commitments and action
- ...
who are telling their story and sharing their reality – and taking on a lot of criticism and attacks for it; their voices will be amplified and bolstered by ours.

Rogerio Mauricio made a commitment on behalf of the Cluster Academia and Research: to continue working hard on what the cluster is already doing; and on behalf of the Action Network Restoring Value to Grasslands: to present the final results of the developed model at the next MSP Meeting in Switzerland. For the third commitment on behalf of the Brazilian Center for Sustainable Livestock, he involved two farmers, Mauroni Cangussù and his son Levy Cangussù, who are speaking for both generations. Both are working on the Mona Lisa Farm. The commitment includes the following points: Silvopastoral system as sustainable alternative for livestock production; Convince neighbors about silvopastoral system; Promoting direct action from GASL to farmers; GASL Certification for Sustainable Systems; Environmental service payment; Promote sustainable studies at university level.

Ulf Magnusson spoke on behalf of the LAMP Action Network to target: a wider geographical scope as well as more work on the pig and beef sector and on the environment. He presented the report of LAMP on Good Practices for responsible use of antibiotics.

Nitya Ghotge from the NGO Cluster presented the commitment to work, support and innovate for small holders, pastoralists and women in livestock. The goal is also to bring visibility to this work and the aforementioned communities, for example through the NGO Policy Brief, which was published during the meeting. Additionally, it is important to reach out to many more NGOs to share learnings, experiences, knowledge and concerns among each other.

On behalf of the Social Movements Cluster, Pablo Frere highlighted the importance of producers in the Cluster. As examples of innovation, he mentioned experiences in cellphone applications, information about climate provision, solutions in animal health, using LEAP guidelines in different pastoral systems, and improving practices in silvopastoral systems. “We have to work together with scientists for strong fundamentals of the solutions we promote.” The Cluster is continuing supporting GASL because the members know the problem and are part of the solution.

Janet Helms of the Inter IKEA Group took the word to share the robust strategy of IKEA regarding sustainability, which goes around the entire food change. The commitment is to be “positive” by 2030. This is being done in a multitude way across forestry products, plastics and food.

Andrew Bisson from USAID thanked everybody for this meeting and expressed his hope to become GASL partner in future. USAID found a lot of agricultural research through a flagship livestock innovation lab and a range of other innovation labs, and will continue this work. The labs are shown in the initiative Feed the Future. Also the USAID’s support to ILRI will continue. He highlighted the innovation for resilience, for example through development and vaccines, but also index insurance and other things that build the capacity of the resilience for the people. Innovation often takes the form of technology but it must also include certain practices, such as public-private partnerships or leveraging some indigenous knowledge. Ideas should be shared to build capacity for great innovations to implement it in the field and achieve impact.

The next commitment was given by Deborah Wilson from TrustBIX Inc, who has been a cattle rancher for 40 years. She shared the innovation of a sustainable supply chain for beef, which was only possible with the multistakeholder approach from NGOs, producers, retailers and others. The result is that the beef producers are receiving benefits back to their operations being recognized as sustainable producers. Before
finishing, she gave Kudos to McDonalds for having started her company on this path and for having made the global statement to do so. She acknowledged all commitments of today including science, research etc. and calls for involving partners now to make it happen on a global basis.

**Mauricio Chacon** from the Ministry of Livestock and Agriculture of Costa Rica made a commitment of the government of Costa Rica to implement two important topics of innovation: the technological change and the development of public policies.

To finish the session, **Ilse Köhler-Roleffson** highlighted the important potential of camels as “dairy animals of the future” for the scenario that temperatures are rising and water levels are dropping: “The nomadic system will be a very important means for production in the future.” She expressed that she’s very pleased how GASL has been developing and is convinced that it will be an important agency in the future.

**Introduction of 2019-2021 GASL Action Plan**

The Global Agenda for Sustainable Livestock has developed and partially implemented a new Action Plan, which will serve as a framework for GASL’s activities from 2019 until 2021. Fritz Schneider, GASL Chair, presented the key directions, goals and objectives of this strategic document.¹

**Presentation of the 2020 MSP Meeting in Delémont, Switzerland**

**Alwin Kopse**, Head of the Department of International Affairs, Sustainable Development and Food Systems at the Swiss Federal Office for Agriculture (FOAG), gave a presentation of the next MSP Meeting, which will take place in Delémont, Switzerland in June 2020. Delémont is a small city with around 12 000 inhabitants, located in the hilly landscape of the Jura region and capital of the canton of Jura in Switzerland. It is reachable by train from the airports of Basel, Zurich, Geneva or Paris. The Jura region is known for the only indigenous horse breed in Switzerland called Franches-Montagnes, the famous Tête de Moine AOP cheese, and the leadership in organic milk production in Switzerland. The 2020 theme will be “The Multiple Roles of Livestock for Sustainable Development” with global topics, which then will be brought down to a regional, local focus. There will be field trips in the Jura region and maybe in the Alpine region, looking at livestock’s roles for biodiversity, tourism, nature conservation, silvopastoral systems, the nexus of livestock and wildlife, the processing and manufacturing of milk, cheese, chocolate, meat, and also including governance issues and farmer co-operatives. During the week, science will not be separated from policy making and practice on the ground but rather integrated including also extension and farmer’s implementation of policies. The third day will be a regional day comparing governance and regulations from Switzerland and the EU/France. There will be as well the Swiss Organic Livestock Day close by and the possibility to visit this fair and to talk directly with farmers. The final day will be an internal GASL housekeeping day.²

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Summary, Conclusions and Next Steps in the Livestock Sustainability Journey: from Kansas to Delémont

Jim Butler, livestock farmer from Texas and member of the 9th MSP Planning Committee gave a conclusion of the meeting. As example of what to take home from this meeting, he mentions several impressions such as the value of an egg that can sustain the live of a young individual, the donkeys in Ethiopia carrying water for the family, or the robotic milking machine on his field trip. “From the donkey that serves an important role to a family to a robotic milking machine – that’s the breadth that we have to try to collapse and bring together”, adding that GASL makes a great attempt to this. Butler expressed his thanks to Fritz Schneider for leading the Global Agenda for Sustainable Livestock and to Donald Moore for taking an active role in getting sponsors for this meeting. He also highlighted that choosing Kansas State University as host was the right decision and thanked the university for its excellent support, especially to Nina Lilja, Susan Metzger and Debbie Hagenmaier.

Fritz Schneider continued with taking up again the sentence “Sustainability is rather a journey than a destination” and added that “this week we have made a small part of this journey.” The 9th MSP Meeting in Kansas has shown that innovation is essential for sustainable livestock development. There are many ways to innovate towards sustainability, as shown for example on the field visits. GASL focusses on processes rather than on well-defined technical solutions, and on practice change based on scientific evidence. GASL is supporting policies towards a more sustainable livestock development. In regards of where to go now, the GASL Chair explained that the Global Agenda would continue implementing the Action Plan, decide where to have the regional meetings, and organize the next MSP Meeting in Switzerland as well as the one in 2020 in China. Furthermore, there will be a revision of the overview papers based on the inputs from this meeting with a broad review in order to publish them later as GASL documents. He emphasized that this meeting has provided a chance for networking and interesting discussions and ended his speech with: “We will continue the Global Agenda’s journey of sustainability with a multistakeholder approach.”

Closing Ceremony

Ernie Minton, Dean of the College of Agriculture and Director of K-State Research and Extension, started the closing session by showing his appreciation of having the 9th MSP Meeting of GASL at KSU. “Livestock systems are very important to us in Kansas and also to Kansas State University.” Sustainable production and the safety and security of food systems are important for KSU as well as “the very noble goal of contributing to the provision of sustainable protein for the people of the world”, which are global concerns. “Today’s food security issues have grown in complexity: they are multidimensional, cross-disciplinary and multinational. They occur in conflict zones around the globe and in areas that are severely impacted by weather related shocks.” Therefore, systemic change, new funding patterns, innovation and public policy in a global partnership are going to be required. Minton said, “Accomplishing sustainable livestock systems is a challenging task because of the diversity of production systems, and I’m pleased by the diversity of people in this room.” Minton underlined that it is only through the diversity of thoughts that he is convinced of the success of this meeting. He thanks all organizers and guests for their support and participation.
Susan Metzger, Senior Executive Administrator to the Dean/Director of the College of Agriculture at KSU, added her closing remarks by thanking the planning committee for allowing this opportunity of having the meeting at Kansas State University. She also gave her thanks to the 60 volunteers, including students from the faculty and staff of the Kansas Farm Bureau, the Kansas Department of Agriculture and local producers, who made sure this event became a success.

Donald Moore, Executive Director of the Global Dairy Platform, continued the Closing Ceremony by saying that “making this meeting happen in the US was an interesting challenge for us.” He thanked the Dairy Sector, USDA as well as other livestock producers in the US and all sponsors for their support.

Berhe Tekola, Director of the FAO’s Animal Production and Health Division, took a look at the development of GASL: “Since the Global Agenda adopted the SDGs as the compass to sustainability in the 2016 Panama MSP, it is amazing to confirm how much its multiple stakeholders have engaged in the quest to show that livestock is key to sustainable development worldwide.” The aspiration to have a strong Global Agenda, which is able to influence practice and policy change everywhere, is now, more than ever, a vivid reality seeing how innovative applications can address the sector’s multiple challenges towards sustainable development and contribute actively to achieving the Sustainable Development Goals through livestock based solutions. Tekola expressed his thanks to everybody involved and presented optimism towards the future of GASL. “Of course many challenges lay ahead, but I am certain that this first US MSP Meeting and also first MSP Meeting hosted by a university will be remembered as a meaningful benchmark in the path of the Global Agenda towards becoming the by far most influential partnership in the livestock sector in the world.”

The Chair of GASL, Fritz Schneider, came again to the stage for some concluding words. He thanked the hosts, the sponsors and donors and specially the organizing committee, Susan, Nina, Jim, Henning, Tim, Eduardo and Anna for an inspiring process of organizing this meeting and having conference calls every Thursday afternoon. Most importantly, he thanked all participants for their commitment of making the livestock sector more sustainable. “Livestock has a lot to go for, livestock is important, and livestock deserves to be recognized as an important element of the global food system.”