More meat milk and eggs by and for the poor

Maziwa Zaidi: Policy Actions for Climate Smart Dairy Development in Tanzania

Policy Briefing Report

10th of August, 2021 | Serena Hotel, Dar Es Salaam, Tanzania

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Ministry of Livestock and Fisheries

IFAD Investing in rural people

ILRI International Livestock Research Institute

Alliance Bioversity International CIAT

Maziwa Zaidi | More Milk in Tanzania

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Executive Summary

On 10th August 2021 in Dar Es Salaam, Hon. Abdallah Ulega (MP), Deputy Minster, Ministry of Livestock and Fisheries officiated a high-level policy briefing event on "Policy Actions Climate-smart dairying in Tanzania". The Tanzania Livestock Research Institute (TALIRI), mandated to coordinate and conduct livestock research in the country, led the event organizing team which comprised of scientists from partner institutions namely; Ministry of Livestock and Fisheries (MLF), The Alliance Bioversity International and the International Centre for Tropical Agriculture (CIAT), International Livestock Research Institute (ILRI) and the International Institute of Tropical Agriculture (IITA). The policy briefing event was built on the outcome of the 16th December 2020 stakeholder workshop held in Arusha, Tanzania together with increasing need for raising awareness on livestock – environment nexus. Stakeholder representation was high including; researchers/academics (29%), policy makers/public sector (25%), media (17%), non-state actors (11%), development partners (10%) and Private Sector (8%) and with good gender balance of 50:50.

The overarching objective of the meeting was to bring research into use and the specific objectives were to:

- Increase awareness and buy-in on the importance of environmental issues and management opportunities in smallholder dairy production among high-level stakeholders in Tanzania
- Follow-up on December 2020 stakeholder meeting in Arusha that identified policy opportunities and key stakeholders
- Share knowledge, learnings, key insights, and messages from research on livestock and environmental impacts in Tanzania that are relevant to decision-making
- Arrive at commitments to action for environmental management in dairy from policy and stakeholders

The Guest of Honor delivered a powerful address recognizing the unexploited enormous potential of the livestock sector and vast rangelands. He made reference to the national development plans and specifically the 2019 launched National Livestock Master Plan, which provide a road map to sector commercialization and modernization. The Guest of Honor endorsed and lauded interventions in livestock – environment nexus in appreciation of the negative effects of livestock on environment and climate change. He challenges stakeholders to come up with strategic Public-Private sector partnerships that will make use of the vast rangelands and underutilized government farm lands to address the feed-forages problems, which is a major determinant of dairy production. In conclusion the Guest of Honor said, climate-smart dairy development is future proof, and we must aim for win-wins – for our people and for the planet. The implementation of climate smart practices and technologies in the livestock sector will go a long way to support the country's goals to reduce GHG emissions.

A team of scientists from Alliance Bioversity International and International Centre for Tropical Agriculture (CIAT), Ministry of Livestock and Fisheries (MLF), Tanzania Livestock Research Institute (TALIRI) and the International of Livestock Research Institute (ILRI) presented a science briefing focusing on:

- Lessons from over a decade of research under the Maziwa Zaidi program which call for use of combined intervention packages including improved animal genetics, feed, and animal health, which can deliver synergetic outcomes between higher incomes and lower greenhouse gas emission intensities.
- The bad and good side of livestock systems and the negative effects of low productivity and resource use inefficiencies on climate change through high greenhouse gas emission intensities.
- The need for climate-smart dairy development and importance of improved forage grasses such as Brachiaria spp. In reducing greenhouse gas emissions.

The research team proposed investments in knowledge transfer, more effective local authority and extension structures, stronger multi-stakeholder partnerships, access to loan and credit facilities, improvement of off-farm income possibilities, better access to input markets including for artificial insemination and forage planting material, and more favorable output markets can all boost future forage adoption rates.

Multi-sector perspective on climate smart dairy development in Tanzania was gathered from a panel discussion followed by a plenary session of Questions and answers. Key issues which surfaced from the discussions were:

- Land tenure is critical for sustainable rangeland management
- Alternative sources of income in the extensive grazing systems such as carbon credits can reduce rangeland degradation
- On-going national policy reviews must factor in livestock-environment aspects
- Climate-smart agriculture practices must be economically viable for good adoption
- Manure management under intensive dairy production system is a challenge and calls for innovative technologies to reduce negative impacts on environment.
- Policy interventions in tax reforms can attract increased private sector investment in medium and large-scale livestock farms
- Stakeholders called for concerted efforts to address land conflicts among livestock keepers and farmers

At the end, the stakeholders pledged their commitments and actions towards climate-smart dairy development in Tanzania, which included; capacity building at different levels, investment in infrastructure, technology development and dissemination, and facilitation of platforms for knowledge and experience sharing.

Prof. Kipanyula, Director for Science, Technology and Innovation, Ministry of Education, Science and Technology, delivered closing remarks by challenging researchers to be more creative and innovative to ensure that research results address policy and development challenges for sustainable socio-economic development. Prof. Kipanyula encouraged partnerships between research institutions and the industry so as to harness the full potential of Climate Smart Dairy Development in Tanzania.

Contents

Table of Photos

Table of Figures

Abbreviations

Acronym	Description
ASDP	Agriculture Sector Development Program
CGIAR	Consultative Group of International Agricultural Research Centers
CIAT	International Center for Tropical Agriculture
CLEANED	Comprehensive Livestock Environmental Assessment for Improved Nutrition
CSA	Climate Smart Agriculture
EMU	Environment Management Unit
ILRI	International Livestock Research Institute
LGA	Local Government Authority
MLF	Ministry of Livestock and Fisheries
MoA	Ministry of Agriculture
MP	Member of Parliament
NGO	Non-Government Organization
SCO	Soil Organic Carbon
TALIRI	Tanzania Livestock Research Institute
TCSAA	Tanzania Climate Smart Agriculture Alliance
TLMP	Tanzania Livestock Master Plan
TNC	The Nature Conservancy
USAID	United States Agency for International Development
VPO	Vice Presidents Office

1. Introduction

The Alliance of Bioversity International and the International Centre for Tropical Agriculture (CIAT) together with partners elevated discussions on, "Environmental Management Opportunities for Smallholder Dairy production in Tanzania by organizing a high-level policy briefing event on, "Climate Smart Dairy Production in Tanzania" on 10th August 2021, at Serena Hotel Dar es Salaam. The policy briefing event was built on the outcome of the December 2020 stakeholder workshop held in Arusha, Tanzania together with increasing need for raising awareness on livestock – environment nexus. Results of over a decade of research on livestock-environment nexus revealed that despite the opportunities and benefits that increased dairy production could bring to Tanzania, livestock systems are also widely recognized as key drivers of global environmental degradation, including increased nutrient loads, greenhouse gas (GHG) emissions, water use, grassland degradation, and land-use conversion. Thus, the predicted higher demand for dairy products poses a danger that the necessary rise in livestock production could become environmentally unsustainable. Efforts to maximize milk yields, production, and profitability could be balanced with long-term sustainability and environmental stewardship, presenting a unique window of opportunity to develop climate-smart dairy production systems (Notenbaert et al., 2020[1]).

Organizing team for the Policy Briefing on Climate Smart Dairy Development in Tanzania :

- Prof. Eric Komba – Director General TALIRI
- Dr. Birthe Paul – Scientist Alliance Bioversity International & CIAT
- Dr. Angelo Mwilawa – Director of Research, Training and Extension MLF
- Dr. Amos Omore – Regional Representative ILRI Tanzania
- An Notenbaert - Senior Scientist Alliance Bioversity International & CIAT
- Beatus Nzogela - Research Associate Alliance Bioversity International & CIAT
- Catherine Njuguna, Communications IITA
- Mireille Ferrari – Communications ILRI

The Tanzania Livestock Research Institute mandated to oversee livestock research in the country led the organizing team (Box 1). Participants were drawn from key stakeholders in the livestock-environment nexus namely, Ministry of Livestock Development and Fisheries (MLF), Department of Environment in the Vice President's office, Local Government authorities from the Maziwa Zaidi project, private sector, non-state actors and the media.

Opening session

The opening session started with recognition of the participants by Dr. Erick Komba the Director General of Tanzania Livestock Research Institute (Appendix 1). A quick analysis of the participants showed that there was a good gender balance with 50:50 male:female ratio (Figure 1). Institutional representation in the event was drawn from Research/ academicians (29%), Policy makers/Public sector (25%), Media (17%), non-state actors (11%) and Development partners (10%).

[1] Notenbaert, A., Groot, J., Herrero, M., Birnholz, C., Paul, B. K., Pfeifer, C., Fraval, S., Lannerstad, M., McFadzean, J. N., Dungait, J. A. J., Morris, J., Ran, Y., Barron, J., & Tittonell, P. (2020). Towards environmentally sound intensification pathways for dairy development in the Tanga region of Tanzania. Regional Environmental Change, 20(138), 14. https://doi.org/10.1007/ s10113-020-01723-5

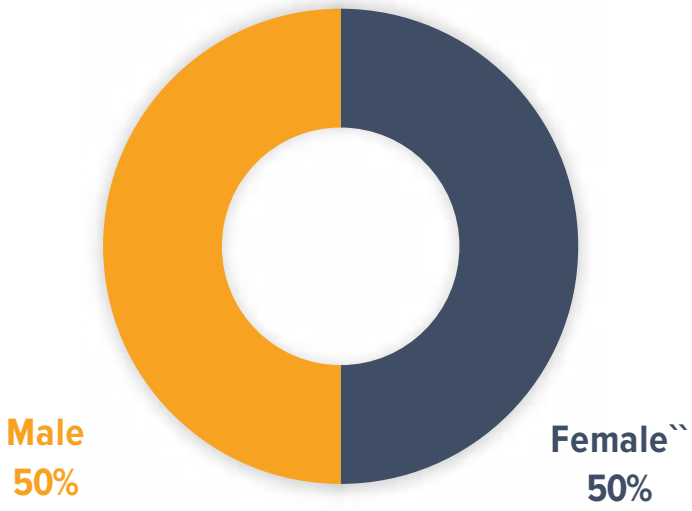


Figure 1 Gender representation during policy briefing on climate-smart dairy development in Tanzania

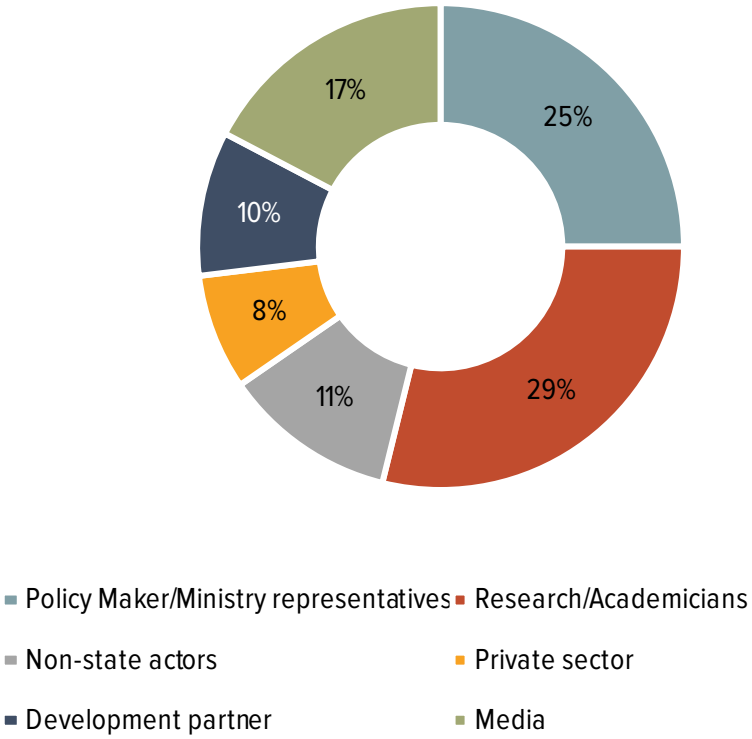


Figure 2 Stakeholder representation during policy briefing on climate-smart dairy development in Tanzania

The introduction session was followed by a recap of the 16th December 2020 stakeholders workshop presented by Dr. Aichi Kitalyi the event facilitator. Recommendations from the December 2020 stakeholder workshop were: -

- Promote and raise more awareness on the relationship between environment and dairy production, including increasing climate change resilience through forage conservation, rainwater harvesting;
- Promote land use planning and environmental measures to protect the environment sustainably; encourage more improvement of the Land Policy;
- Strengthen water and soil conservation in dairy production, reducing GHG emission due to dairy production,
- Improve dairy genetics to select breeds with lower emissions from enteric fermentation and
- Promote climate resilient cross-bred cattle like the Mpwapwa breed,
- Promote proper handling of manure including its application on forages, and the use of biogas as an alternative source of energy.

Dr. Birthe Paul, Scientist at the Alliance of Bioversity International and CIAT, presented the objectives and agenda of the Policy Briefing event. Dr. Paul said the overarching objective of the meeting was to bring research into use. Specific objectives were:-

- Increase awareness and buy-in on the importance of environmental issues and management opportunities in smallholder dairy production among high-level stakeholders in Tanzania
- Follow-up on the December 2020 stakeholder meeting in Arusha that identified policy opportunities and key stakeholders
- Share knowledge, learnings, key insights, and messages from research on livestock and environmental impacts in Tanzania that are relevant to decision-making
- Arrive at commitments to action on environmental management in dairy from policy and stakeholders

Dr. Paul pointed out the main agenda items as per the program (Appendix 2). Dr. Paul said that after the preliminary remarks and official address there will be a science presentation on insights, key messages and recommendations from research to be presented by Dr. An Notenbaert. This will be followed by a facilitated panel discussion drawing on practical experiences and multi-sector perspectives on climate smart dairy development. Participants will deliberate on concrete policy actions needed to develop climate smart dairy sector and gather stakeholder commitments.

Photo 1 Dr. Birthe Paul, scientist at the Alliance of Bioversity International and CIAT, presenting objectives and agenda of the policy briefing

Official Opening address by Hon. Abdallah Ulega (MP), Deputy Minister – MLF

Photo 2 Hon. Abdallah Ulega (MP) Deputy Minsiter - MLF giving the official address

The Honorable Guest of Honor gave a powerful speech (see full speech in Appendix 4), delivered in English and Kiswahili, interchangeably but mostly the latter, which is the national language. In his address he emphasized on national plans, commitments and directives to stakeholders. He thanked the research team and all partners under the Maziwa Zaidi II Program for organizing the event and acknowledged the good collaboration with national institutions and stakeholders towards climate smart dairy feeding practices. The Guest of Honor went on to underscore the importance the livestock sector contribution to national macro- and micro-economy saying that over 50% of the national population depends on livestock for their livelihoods.

Key highlights from the Guest of Honour address:

- Modernizing and transforming the livestock sector is a national priority and this is laid out in the national development plans; the Development Vision 2025, the ruling party manifesto 2025, Agricultural Sector Development Plan (ASDP) Phase II. Furthermore, the Livestock Master Plan that was launched in 2019 by my Ministry, developed with technical support from ILRI and financial support from the Bill and Melinda Gates foundation is more detailed for the different subsectors.
- The annual national deficit of 9 billion liters of milk against a fast-growing population and climate change challenges affirms the importance of the research addressing the major constraint in the dairy sector i.e., quantities and quality of livestock feed.
- Researchers were urged to put research into use and ensure that their research findings reach the farmers at the grassroot level and improve their livelihoods.
- The Guest of Honor acknowledged the negative impact of the traditional livestock production systems on climate change and said this is factored in the national plans of modernizing and transforming the dairy sector.
- Farmers need capacity building particularly in forage production, conservation and use because feeding is a major constraint. The Guest of Honor reckoned that stakeholders should promote forage production even from maize.
- The Guest of Honour challenged the stakeholders to partner with the Government and make use of the underutilized land in most national farms such as Vikughe pasture production farm in Kibaha region and the National Ranching Companies.
- Climate-smart dairy development is future proof, and we must aim for win-wins – for our people and for the planet. The implementation of climate smart practices and technologies in the livestock sector will go a long way to support the country's goals to reduce GHG emissions.

Vote of thanks by Mr. Chali Thomas for the Vice Presidents Office, Department of Environment.

Mr. Thomas thanked the Guest of Honor for his time despite his busy schedule and many obligations. He noted the speech had powerful message to stakeholders and specifically the need for research to be directed and tailored to grassroot communities and ensure their lives are transformed. Mr. Chali pledged commitments to follow up on the Guest of Honor directives on key issues to address aiming at sustainable and climate-smart dairy development in Tanzania. He thanked participants for committing time to the event and wished them good deliberations.

Science briefing: Climate-smart dairy development in Tanzania

Dr. Amos Omore, ILRI Regional Representative and Coordinator of the Maziwa Zaidi multi-institutional program led the presenting team by introducing the key research question being addressed by the nearly a decade research as; How to improve agricultural research for development and make it more impactful. Dr. Omore went on to present the Maziwa Zaidi lessons on inclusive and sustainable dairy value chain upgrading, which are now in public goods and can be accessed on https://maziwazaidi.org/publications/. The latest focus of the program under Maziwa Zaidi II is on generating evidence on integration and agripreneurship as drivers of technology uptake and inclusive upgrading. Dr. Omore making reference to the latest IPCC report released on 9th August 2021 which puts a red alert and need for urgent action to address climate change issues, said that Maziwa Zaidi factored climate change among other environment issues in the research for development. He stressed on the need to make dairy production more efficient to address the milk supply-demand gap estimated at 77% over the next 5 years without intervention (TLMP, 2019).

Prof. Erick Komba the Director General of TALIRI presented the environmental concerns in livestock systems highlighting the bad and the good side of livestock (Figure 3). Livestock contributes 15% of the total global GHG emission but livestock is a path out of poverty for many people.

Photo 3 Dr. Amos Omore, ILRI Tanzania presenting the Maziwa Zaidi program

Photo 4 Prof. Eric Komba, DG TALIRI presenting background to the livestock-environment research

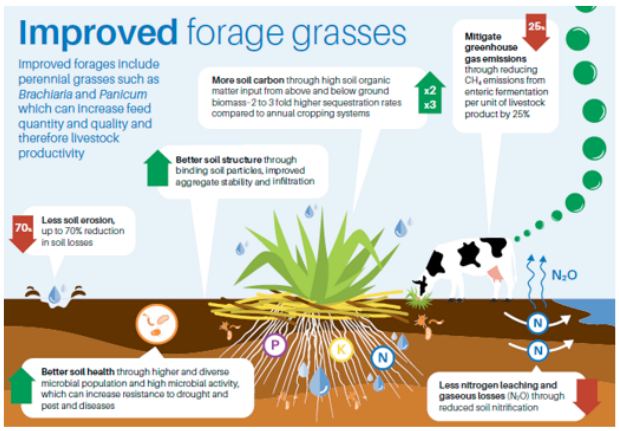
Figure 3 The Bad and the Good side of livestock

Figure 4 depicts the effects of low productivity and resource use inefficiencies. Dr. Komba concluded his part by pointing out Tanzania government responses by making reference to the national policies, strategies and plans including compliance with the UN climate change protocol.

Figure 4 Low productivity and resource use inefficiencies in livestock production.

Dr. An Notenbaert presented the last part of the presentation, which focused on the need for climate-smart dairy development. She noted that negative narratives on livestock overshadow the livelihood benefits. Reviewing seven decades of livestock research, Dr. Notenbaert noted that livestock-environment research in Africa is limited. Research findings attest that improved feeding and forages can deliver win-win solutions for people and planet. Brachiaria grasses adapted to drought and low fertility are among the recommended tropical grasses. Figure 5 describe the climate and soil so-benefits of tropical grasses.

Photo 5 An Notenbaert, senior scientist at the Alliance of Bioversity International and CIAT, delivering the science briefing

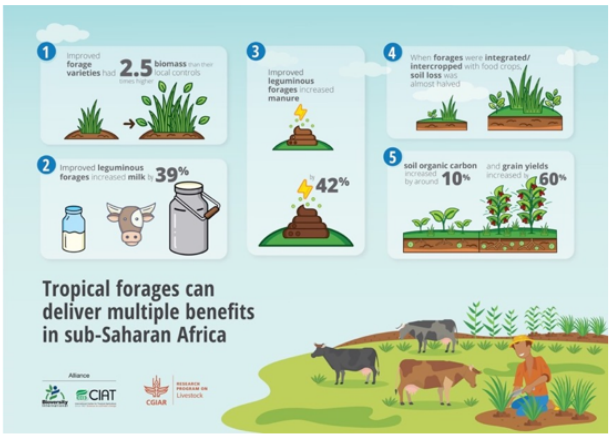


CIAT. 2019. Soil and climate benefits of improved forage grasses. International Center for Tropical Agriculture, Nairobi, Kenya. 1p. https://hdl.handle.net/10568/107153

Figure 5 Climate and soil co-benefits of tropical grasses.

- Higher-quality feeds mean livestock produces **less GHG emissions** because they are easier to digest and because proportionally less feed goes to maintaining the animal as compared to producing milk.
- In addition to shrinking GHG emissions per litre of milk planted **forages can boost soil organic carbon (SOC)** through their deep-rootedness and perennial nature, promote soil rehabilitation, and improve soil quality
- Soils under well-managed forage grasses exhibit **positive soil-health qualities** such as higher organic matter concentrations, efficient nutrient use, low susceptibility to erosion, and good structure

Figure 6 shows the Multiple, synergetic benefits of tropical forages and a case study from Tanga flagging environmental impacts with CLEANED (Comprehensive Livestock Environmental Assessment for Improved Nutrition) model was presented.



Paul, B.K.; Koge, J.; Maass, B.L.; Notenbaert, A.; Peters, M.; Groot, J.C.J.; Tittonell, P. (2020) Tropical forage technologies can deliver multiple benefits in Sub-Saharan Africa. A meta-analysis. Agronomy for Sustainable Development 40:22. https://hdl.handle.net/10568/108642

Improved livestock feeding and forages can heighten productivity and incomes, decrease emission intensity as a co-benefit, increase manure quantity and quality, and improve soil fertility health. If well integrated with crop production, they can also heighten food productivity

Figure 6 Multiple, synergetic benefits of tropical forages

The Tanga case study showed that economically feasible farm-level productivity increases of up to 140% go hand-in-hand with up to 50% reduction in greenhouse gas (GHG) emission intensities. However, absolute increases in water, land and nitrogen requirements in mixed crop-livestock systems call for careful management of stocks and quality of these resources. It was noted that adoption of climate-smart dairy practices is low and a number of constraints were listed. The research team proposed investments in knowledge transfer, more effective local authority and extension structures, stronger multi-stakeholder partnerships, access to loan and credit facilities, improvement of off-farm income possibilities, better access to input markets including artificial insemination and forage planting material, and more favorable output markets can all boost future forage adoption rates. Policy recommendations to key stakeholder categories; National & Local Government, Non-governmental organization and civil societies, Research, Funders & Private sector and media and public awareness actors were given. Key messages from the science presentation can be summarized as: -

- Livestock generates multifaceted economic and cultural benefits in Tanzania – close to half of Tanzania's population depends on livestock, and 70% of milk and meat is produced in mixed crop-livestock systems.
- Maziwa Zaidi (More Milk) is needed - the demand for milk is projected to increase by 77% over 5 years in Tanzania; however, the necessary rise in dairy production presents a substantial economic opportunity for smallholder farmers but also implicates potential challenges to ensure its environmental sustainability.
- Livestock systems are the main contributor to agricultural greenhouse gas (GHG) emissions and key drivers of global environmental degradation globally - in Tanzania, the agricultural sector is the second-largest contributor to national GHG emissions, with enteric fermentation and manure being main sources
- Research shows combined intervention packages including improved animal genetics, feed, and animal health can deliver synergetic outcomes between higher incomes and lower greenhouse gas emission intensities – if skillfully implemented, they can nearly double farm-level productivity and reduce greenhouse gas intensities by half;
- Improved dairy feeding and forages are key entry points, offering win-wins between economics and the environment; improved tropical forages can deliver multiple benefits, from boosting incomes to climate change mitigation and soil protection co-benefits, and positive impacts on food productivity if associated with crops;
- Despite its potential to deliver win-win solutions for climate-smart dairy development, the uptake of improved forages remains relatively low in Tanzania and requires concerted action by stakeholders.

Full presentation can be accessed (https://hdl.handle.net/10568/114706)

Panel Discussion: Practical experiences and multi-sector perspectives on climate smart dairy development

Panelist: Dr. Lucy Maghembe, Country Director, The Nature Conservancy (TNC)

Question

What are the main challenges of the dairy-environment nexus towards resilient future from TNC Perspectives, What role TNC can play to address the challenges**?**

Response:

Dr. Maghembe started with brief introduction on TNC. She said TNC started working on land and livestock in United States, later came to Africa. In Tanzania TNC works in Northern Tanzania and started working on conservation and wildlife management. TNC works o: a) land ownership; b) grazing plans; c) bringing value to land (links to markets also for Carbon credits). Trying to avoid conversion from grasslands to agriculture through getting ownership titles and making money from environmental services markets. Increase of Soil Organic Carbon (SOC) through improved grazing management as carbon credits can generate income and this has been piloted in Kenya where verification protocol was developed.

From TNC perspective Rangeland is core to healthy livestock as well as wildlife. Key livestock -environment related challenges are:

- Rangeland degradation
- Invasive species
- Communal land ownership – tragedy of commons.

TNC interventions to address the challenges have been:

- Advocation for clear ownership of the land to avoid the tragedy of commons syndrome
- Improve rangeland management through grazing plans
- Bring value to land through fattening
- Link pastoralists to markets

Panelist: Mr. Prosper Makundi – Head Environmental Management Unit – Ministry of Agriculture

Question

Share with us your understanding of how dairy sector has featured in national discussions on climate change related interventions such as the Agriculture Climate Resilient Plan, the Climate Smart Agriculture program & Guidelines, National adaptation Plans etc.

Response:

Mr. Makundi reported that the Ministry of Agriculture ministry spearheaded CSA guidelines in 2017 with 4 priority actions of which #2 is uptake of CSA priorities. He noted that before formation of a sister EMU unit in the Ministry of Livestock and Fisheries, EMA in the MoA involved the livestock ministry in the development of CSA guidelines. Environmental degradation needs to be well considered in all planning. Context specific interventions such as improved feeds and breeds, manure management to reduce GHG emission intensity of livestock should be promoted.

Panelist: Mark Tsoxo - Program Director, Tanzania Milk Processing – Heifer International

Question

What strategies or priority areas do you think should be promoted among the small holder dairy farmers to address the challenge of resource use inefficiencies?

Response:

Mark Txoso introduced Heifer in Tanzania saying they have been in Tanzania for nearly 50 years, promoting dairy productivity by introducing improved breeds, artificial insemination (AI) technology, feed production/conservation/ utilization. Heifer work with farmer groups building on social capital. Mr. Tsoxo is of the opinion that adoption cannot be guaranteed unless the Climate-smart agriculture practices increase incomes. CSA should go together with commercialization.

Panelist: Yusufu Selenge - Head of EMU – MLF

Question

What are some of the major constraints do you anticipate in addressing the dairy-environment challenges and what are possible solutions?

Response:

Land degradation is the main challenge in the extensive livestock system. In intensive dairy production systems, manure management is the main challenge. Mr. Selenge said there is a national institution in Arusha that deals with biogas technology, which is an environment friendly way of managing manure. However, the technology requires substantial amount of manure which is a problem in extensive system. The Ministry of Local Government is addressing the climate change problem by disseminating climate information to grassroots and push for settlements where the livestock keepers can be served with water dams and educated in forage planting.

Panelist: Dr. G. Msalya – Registrar Tanzania Dairy Board & Senior Lecturers Sokoine University of Agriculture

Question

How are dairy-environment interactions factored in the current national policy reviews

Response

The 2006 Livestock policy did not factor in much of climate change issues. However the policy is under review providing a window of opportunity to overhaul the policy and make climate change component stronger.

Panelist: Feddy Tesha, Managing Director, Prophate Dairies

Question

As a long-term urban dairy producer and processor, can you share what has been major dairy-environment related challenges over the years?

Response

Madam Tessha, said that when she started dairying in 1996 dairy feeds were affordable, there was adequate rain and pasture land was not a major limitation. However, of late there has been growing pressure on natural resources reducing availability of pasture/forages. These changes can be attributed to effects of climate change and lack of appropriate interventions to address the challenges.

Panelist: Semali Kisamo – Agricultural Policy Expert, USAID (Online Participant)

Question

Livestock modernization and commercialization is on the increase in Tanzania. With rapid growth of medium and large-scale farms dairy included. What pertinent Policy issues with regard to dairy and environment need to be addressed for sustainable dairy productivity growth?

Response

Mr. Semali Kisamo said USAID focusses on productivity challenges and advocated for private sector investments, appropriate regulatory reforms, incentives through tax reductions and quality extension services. He proposed two-pronged approach in addressing dairy value chain challenges; increasing productivity and reducing production costs. In the area of policy, he suggested incentives through reduced taxes and subsidies for inputs.

Panelist: Shwakaanande Natai – Coordinator Tanzania Climate Smart Agriculture Alliance (TCSAA)

Question

What is your advice on how best to move forward to smart-dairying given the growing demand for dairy products domestically and for export?

Mrs. Natai started by saying that dairy has not been prominent in the Climate Smart Agriculture discussions because the MLF took long to establish an Environmental Management Unit. It is encouraging to see that now EMU in the MLF has been established. Livestock needs to be integrated in landscape level work and she called for cascading of the Climate Smart Agriculture Alliance work to the local government plans. International and national investors should interact with the grassroots where actions for climate change adaptation are more needed.

Issues raised in plenary included: -

Integration of fodder shrubs in rangelands and not only in mixed crop-livestock systems.

Concerted efforts from the government to address the land use conflict between pastoralists and crop farmers, which require inter-ministerial collaboration.

Mr. Chali of VPO noted that 2006 livestock Policy review is ongoing and should be out soon. Another recent development is the launching of the New Climate change response Strategy which was launched during the week of environment in 2021.

Photo 6 The Panel discussion session

Actions and commitments from various actors

Stakeholders pledged their commitments through different interventions including: -

NGO's and Civil Societies

- Support communities in rangelands to access money from SOC
- Do fundraising for Climate-Smart dairy
- Capacity building in land, livestock and manure management, organizational development for group formation for increased market access
- Provide platform for knowledge and experience sharing

TCSAA

- Embark on resource mobilization for policy-research interface
- Establish 4 more District Climate Smart Agriculture Alliances

Vice Presidents Office, Department of Environment

- promote infrastructure
- promote climate-informed technology for Livestock production
- tailor-made projects geared towards CC adaptation
- promote livelihood diversification for livestock keepers
- promote integrated rangeland management
- train livestock keepers to grow forages
- promote use of improved livestock breeds
- enhance animal health

Ministry of Livestock and Fisheries.

- increase investment in technology development and dissemination in climate-smart livestock production
- welcome different partners to collaborate on CS livestock development, so that livestock can contribute to livelihoods sustainably and reduce GHGs
- portray livestock as part of the solution in addressing climate change challenges

Ministry of Agriculture

» Promote use of manure to increase soil fertility thus reducing dependence on artificial fertilizer.

TDB: Ensure that climate change is factored in the ongoing livestock policy review

Next steps

- Integrate feedback, insights from this meeting into policy brief (Organizing Team)
- Produce and circulate the meeting report (Facilitator and Organizing Team)
- Digest how to follow through on the commitments. (Organizing Team)
- Organize another outreach event around synthesized lessons and key messages from animal health, feed and forages, animal genetics and markets.

Closing remarks by Prof Kipanyula, Director for Science, Technology and Innovation, Ministry of Education, Science and Technology

After a word of gratitude to almighty God, MLF and event organizers, Prof. Kipanyula noted that the forum provided a platform for different stakeholders to interact on livestock-environment nexus. The policy dialogue was successful with many commitments made. Prof. Kipanyula reflected on the meeting objectives saying the event was timely and well aligned to government aspirations stipulated in the Five-year development plan and the CCM 2021 Manifesto. Importance of research and innovation as the engine for vibrant agricultural sector was underscored by Prof. Kipanyula. He said there can never be a true and sustainable Dairy industry development without high quality research while embracing technological advances including Climate Smart Dairy Development in Tanzania and the whole African region. He then urged TALIRI and other research institutions to translate their research findings into tangible products and services which directly benefit the local community or the end users. Research excellencies should not end up in peer reviewed journals only, but rather solve community and society challenges.

Prof. Kipanyula reminded researchers of the need for mindset change and thinking outside their comfort zone if they are to conduct research that solve real life challenges. Critical thinking and creativity are key to remaining competitive and leaving our mark as a nation in frontiers of international science.

Prof. Kipanyula concluded his closing address with five main points: -

- Policy dialogues are very important platforms for engagement between researchers and policy makers and should be conducted regularly to allow wide knowledge sharing and thus promote technology transfer;
- Participants were urged to work on the resolutions made on Climate Smart Dairy Development in Tanzania and link them to socioeconomic development in a local and broader context.
- Researchers and policy makers must see how best such research results could address policy and technology gaps for sustainable socioeconomic development;

Photo 7 Prof. Kipanyula, giving the closing remarks

- TARILI and other research institutions as well as development partners should continue undertaking both basic and applied research on Climate Smart Dairy Development in Tanzania with a primary objective of creating innovative solutions to address dairy farmers challenges, in cities as well as in rural areas; and
- Strong partnerships between research institutions and the industry are crucial, in order to harness the full potential of Climate Smart Dairy Development in Tanzania.

Prof. Kipanyula declared the meeting officially closed and wished all participants safe return to their places. You can find his full speech in Annex 4.

Appendix 1 Media Coverage

The event was well represented in local media in Tanzania.

Daily news, Stakeholders meet in Dar for dairy sector sustainability, https://www.dailynews.co.tz/news/2021-08-0961112bc94772d.aspx, Tuesday, 10 August 2020,

Habari Leo, Ulega ataka tafiti ziwafikie wafugaji (Ulega wants research findings to reach livestock farmers) Wednesday, August 11

Habari Leo (Feature), Ufugaji kisasa utaongeza maziwa, nyama, utapunguza hewa ukaa (Modern livestock keeping will increase milk and eat and reduce GHG) Friday, August 13

The Citizen (Feature), How improved breeds can boost climate smart dairy 15 August, Sunday

Guardian, Better breeds, feed key to dairy sector potential, August 13

Nipsahe Feature), Kufuga kienyeji ni 'sawasawa' na aathari mabadiliko tabianchi (Keeping of livestock using traditional methods leads to climate change). Thursday August 17

TBC news Tuesday August 10 and morning talk show Wednesday August 11

https://www.youtube.com/watch?v=hEGbGuYh0PI&t=1291s

Timings: 9.05 – 10.50 and 16.20 – 42.20

Daily News, Tuesday August 10,2021

TUESDAY AUGUST 10, 2021

Stakeholders to deliberate on dairy sector sustainability

By DAILY NEWS Reporter

DAR ES SALAAM will today host a meeting of stakeholders including policymakers, researchers, private sector and development actors to deliberate on concrete actions needed to develop a sustainable dairy sector in Tanzania.

According to a statement released by International Institute of Tropical Agriculture (IITA) Regional Communication Officer/Eastern Africa, Catherine Njuguna in the city yesterday, the occasion will be graced by Deputy Minister for Livestock and Fisheries, Abdallah Ulega, during which participants will arrive at commitments to action for climate-smart dairy development.

She further said the policy briefing event will see stakeholders sharing knowledge, findings, key insights and messages from research on dairy and environmental impacts in the country that are relevant for decision-making and policy formation.

"The debate will increase awareness on the importance of environmental issues and win-win solutions in smallholder dairy production among high-level stakeholders in Tanzania.

"This is one that delivers a double -win for the country's food and income security, and economic development, and at the same time, contributes to efforts to protect the environment and slow down climate change.

"During the event, the research team will share knowledge and key insights from nearly a decade of joint research on climate-smart dairy development opportunities in Tanzania," she pointed out.

The research was led by the Tanzania Livestock Research Institute (TALIRI), the Alliance of Bioversity International and International Center for Tropical Agriculture (CIAT) and the International Livestock Research Institute (ILRI) as part of their joint country programme research on how to sustainably develop the dairy sector in Tanzania.

This event is part of a learning series around livestock and climate change and follows up on a recent multi stakeholder consultation on environmental management on dairy production held in Arusha in December 2020. One of the identified win-win opportunities for the climate-smart intensification of dairy production is improved feeding and forages.

This come with the background that milk consumption is recommended by many nutritional guidelines for meeting daily requirements for calcium, animal proteins and vitamin B12 intake, where with comparison to other countries in the region, Tanzania's current annual milk consumption of 45 litres per capita and still low. To encourage milk consumption, the country has to support various promotional events and programs, including school feeding

However, for this to happen, there is a need for joint priorities and concerted action by stakeholders in capacity building, policies and investments to scale the existing opportunities.

Guardian August 13, 2021

The Guardian

Guardian 13 August 2021

'Better breeds, feeds key to dairy sector potential'

By Guardian Reporter

TANZANIA needs to increase investments in improved animal breeds, feeds and animal health for the country to realize its potential in the dairy sector, a new study shows.

Conducted by the Tanzania Livestock Research Institute (TALIRI) and other partners, the research findings assert that if things remain as they are, Tanzania's existing supply gap for milk could worsen by up to three quarters of needs in the next five years.

Tanzania has more than 10 per cent of Africa's cattle within its borders, but productivity is far below its potential. Dairy farmers need support to adopt new technologies and receive training to raise productivity of their animals while adapting to and mitigating effects of climate change, the findings noted.

Dr Birthe Paul, a scientist at the Alliance of Biodiversity International and the International Center for Tropical Agriculture (CIAT) said that the research shows that improved feeding and forages, together with better livestock genetics and health, can deliver synergetic win-win outcomes for the people and the planet..

"If skillfully implemented, dairy farmers can nearly double farm-level productivity and reduce greenhouse gas emission intensities by half."

The research was carried out by TALIRI in collaboration with the scientists from the Consortium of International Agricultural Research Centres (CGIAR) from CIAT and the International Livestock Research Institute (ILRI).

Investments in the development of a sustainable dairy sector in Tanzania could deliver a double win for the country's food and income security and economic development, and at the same time contribute to efforts to protect the environment, the expert noted.

Livestock products are an important factor in nutrition and provide income for millions of smallholder farmers. Beef and dairy cattle are the highest contributors to global greenhouse gas emissions within the agriculture sector and among the key drivers of environmental degradation.

Findings from the research are in line with the Tanzanian government's ambitions to build a modern and sustainable livestock sector by 2025 that is professionally and commercially run to ensure food security and provide improved incomes for households and the economy, while conversing with the environment.

Abdallah Ulega, the deputy minister for Livestock Development and Fisheries, said that modernising and transforming diary production is a priority for the government. "However, we can only succeed if we take into consideration climate change, in both the challenges it poses to the livestock sector and the impact the sector has on climate change," he declared.

The government is aware that socio-economic transformation efforts should be anchored in agriculture as the cornerstone of the economy, in order for the nation to achieve significant and sustainable impact on poverty reduction and economic development, he said.

Livestock contributes significantly to the country's development agenda, he further noted, elaborating that "we have great untapped potential within our borders. Eleven percent of Africa's population is here in Tanzania. We have significant numbers of goats, sheep, pigs and chickens. Close to half of our population depends on livestock for their income in one way or another," he added.

Nipashe Tuesday August 17, 2021

Nipashe
TESA
Jumanne Agosti 17, 2021
TEKNOLOJIA · ELIMU · SAYANSI

Kuunganisha wanafunzi na wahisani jitihada zinazonufaisha wasichana

SAYANSI
NA GAUDENSIA MNGUMI

Kufuga kienyeji ni 'sawasawa' na athari mabadiliko tabianchi

• Kunajaza joto duniani, tufani, ukame, vimbunga

12 TESA Jumanne Agosti 17, 2021

Kufuga kienyeji ni 'sawasawa' na athari mabadiliko tabianchi

Watafiti na watunga sera za ufugaji wa kutunza mazingira wakiongozwa na Naibu Waziri wa Mifugo na Uvuvi, Abdallah Ulega (katikati waliokaa) Kulia kwake ni Dk. Angelo Mwilawa na An Notenbaert. **PICHA: GAUDENSIA MNGUMI**

INATOKA UK.11

wa hewa ukaa na kuongeza mara mbili mapato iwe nyama, maziwa na chochote kingine kinachotokana na ufugaji himilivu".

ANATOA ANGALIZO

Profesa Komba anasema tatizo linaloweza kukwamisha juhudi hizo ni wafugaji kushindwa kupokea teknolojia mpya akisema kwa mfano TALIRI ilitoa mafunzo kuhusu teknolojia mpya hiyo ya ufugaji kwa kwa wafugaji 300 wa Kongwa mkoani Dodoma.

Lakini, anaongeza yalipokelewa ni mmoja akaanza na wengine watatu wakamwiga baadaye hivyo watu wanaweza kuona ugumu wa upokeaji wa teknolojia mpya miongoni mwa walengwa.

Anasema ni lazima kufanya juhudi zaidi na kuhamasisha wakulima, wafanyabiashara na wafugaji ili kuipokea na kuitumia teknolojia mpya kwa ajili ya kuwa na kilimo na ufugaji himilivu unaozuia mabadiliko ya tabianchi.

Mkurugenzi wa Utafiti, Mafunzo na Huduma za Ugani katika Wizara ya Mifugo na Uvuvi, Dk Angello Mwilawa, anasema kwa Tanzania jitihada zimeshaanza kwa sababu kuna malisho na mbegu za malisho hayo, mfano TALIRI ina malisho mengi na hata wizarani pia wanafanya utafiti wa nyasi zilizoboreshwa ili yatoa lishe yenye virutubisho muhimu na bora zaidi kwa mifugo.

Kwa mfano, anasema kuna mashamba ya malisho ya serikali ambayo yanatoa mbegu mbalimbali na utafiti umefanyika tena kuna malisho au chakula cha mifugo cha aina mbalimbali kinachotakiwa kuhamasishwa kwa wafugaji.

" Halikadhalika kuna yanayozalishwa kwenye shamba la Langwira mkoani Mbeya, yapo mengine kwenye mashamba ya utafiti ya TALIRI Mpwapwa, Kongwa na Tanga kunakozalishwa malisho na mbegu." Anasema Dk. Mwilawa.

> Kwa kutumia malisho yaliyoboreshwa na mbari bora zaidi tutapunguza mara mbili uzalishaji wa hewa ukaa na kuongeza mara mbili mapato iwe nyama, maziwa na chochote kingine kinachotokana na ufugaji himilivu.

Anataja baadhi ya mbegu zilizotafitiwa kupata malisho bora ya 'rhodes' yanayotengeza 'hey' au malisho makavu yanayotumika wakati wa kiangazi.

Anataja kuwa yapo mengine yenye protini kwa wingi yanayoitwa 'braquiaria' ambayo hayazalishwi Tanzania na badala yake huagizwa nje kwa mfano katika nyanda za juu kusini kuna mashamba ya 'braquiaria', lakini mbegu zinaagizwa kutoka nje, nchini Mexico na kilo moja huuzwa Shilingi 45,000.

Dokta Mwilawa anasema zipo mbegu nyingine zinazozalishwa nchini ambazo huuzwa Sh. 20,000 kwa kilo na hizo ni jamii ya mikunde.

Anasema hizo ni bei ya serikali lakini kwa watu binafsi mbegu hizo ni ghali zaidi kilo ya mbegu za malisho jamii ya mikunde inafikia 35,000.

Anasema;"ni kiu ya Wizara ya Mifugo na Uvuvi, kuhamasisha kuzalisha malisho na katika halmashauri 37 tumeanzisha mashamba darasa ya mifugo wafugaji wajifunze kustawisha malisho na wazalishe chakula cha mifugo yao na kuvuna mbegu na kupanda malisho na watumie chakula hicho kulishaji kisasa ."

KUBORESHA MBARI

Akizungumzai suala la mbari anaungana na Profesa Komba kuwa ng'ombe wa asilia hutoa maziwa na nyama kidogo na kwamba kuboresha mbari au kosafu ndiyo mkakati ili zitoe mazao mengi kwa muda mfupi.

"Hili linawezekana kwa mifugo kula malisho bora ili itoe nyama na maziwa kwa wingi na kupunguza migogogoro ya wafugaji na wakulima na kuzunguka huko na huko kusaka malisho."

An Notenbaert, ni mtafiti mwandamizi wa taasisi ya Alliance of Bioversity International ya Nairobi Kenya, ambaye pia ameshiriki utafiti huo, akitoa maoni yake anasema, baada ya kufanya utafiti kwenye sekta ya maziwa ambayo ni fursa kwa wafugaji kufanya biashara, wamegundua kuwa mifugo ina athari kubwa kwenye mabadiliko ya tabia nchi.

Anasema licha ya kutumia maji mengi, ardhi kubwa na malisho mengi inatoa gesi ya ukaa kwa wingi.

Anawataka wafugaji watumie fursa hiyo ya kuzalisha malisho na kufuga mifugo iliyoboreshwa kuzalisha na kunufaika kiuchumi, lakini kwa kutunza mazingira.

Anaongeza kuwa bila kuboresha ufugaji wawekezaji wanaweza kuikimbia sekta hiyo kwa vile zama hizi kuna uangalifu ili kuepuka uzalishaji kwenye maeneo yanayochochea ongezeko la joto duniani.

"Tunafanya utafiti kupata njia bora za uzalishaji mifugo yenye afya kupata nyama bora, maziwa mengi na bila athari kwa mazingira lakini kwa faidi kubwa kiuchumi," anasema An.

VIKWAZO VINAVYOIBUKA

An asema matatizo yanayohusiana na utafiti wa mifugo ni pamoja na Tanzania kuwa kubwa na pia kuna hali za hewa tofauti na si kila teknolojia inaweza kufaa na kutumika eneo moja.

"Ni lazima kufanya utafiti mara kwa mara, kujua malisho yepi yanafaa kwa mazingira gani, kuona namna bora ya kupata fedha za kuboresha mbari, kununua mbegu, kuzipanda, kuzitunza na kuwa na huduma bora za ugani , masoko" anasema mtafiti An.

Naibu Waziri wa Mifugo na Uvuvi, Abdallah Ulega, akifungua mkutano huo anawataka watafiti na wadau wengine wa mifugo kuelimisha wafugaji umuhimu wa kupanda malisho kwa ajili ya mifugo yao.

Aidha, anaeleza kuwa wafugaji wengi ni wagumu kupokea teknolojia mpya na hawakubaliani na utaalam mpya ya kupanda malisho.

Anawahimiza wadau kuwapa wafugaji elimu na teknolojia hiyo kuhusu umuhimu wa kuzalisha malisho bora ambayo licha ya kunenepesha mifugo, watapunguza migogoro ya ardhi ya malisho, matumizi makubwa ya maji na nyasi nyingi lakini pia kupunguza kuzalisha hewa ukaa.

Kwa wafugaji wa Dar es Salaam na ukanda wa pwani kuna uhaba wa malisho, Naibu Waziri analitaja shamba kuzalisha mbegu bora za malisho la Vikuge liliko Kibaha mkoa wa Pwani kuwa likiwa na hekta 515 na kwamba halijatumiwa kikamilifu na kwamba bado ni pori na kuitaka TALIRI kufyekwa vichaka na kuzalisha malisho na kukidhi mahitaji ya wafugaji wengi wa ukanda huo.

Anaitaka Kampuni ya Ranchi za Taifa (NARCO) kuzalisha malisho ya kutosh kwani ina mashamba mengi makubwa lakini ikifika kiangazi mifugo yake inakosa malisho. "Malisho yanaweza kuwa hata mahindi na siyo majani pekee. Mahindi yatakuwa chakula cha watu na majani watakula mifugo. Hatujawakataza kulima mahindi au alizeti kama humuwezu ingieni ubia, tafuteni wawekezaji," anahimiza.

Tweets

Hashtag ClimatesmartdairyTZ_ was used and 15 tweets were shared.

peterballantyne @peterballantyne · Aug 11

#maziwazaidi research in #Tanzania shows that #dairy interventions combining genetics, feeds and health can raise incomes & reduce GHG emission intensities. Look out for the policy brief at cgspace.cgiar.org/handle/10568/8... **#climatesmartdairy_tz** #whylivestockmatter @amosomore @BirthePaul

> **Livestock CGIAR** @Livestock_CGIAR · Aug 10
>
> It's a wrap! Thanks to the organizers @UvuviNa @BiovIntCIAT_eng @ILRI & #TALIRI. To our wonderful participants, thanks for your active participation & commitments to support a climate smart dairy sector for #Tanzania!
> #ClimateSmartDairy_TZ
> #OneCGIAR #SustainableLivestock

1 4

Livestock CGIAR @Livestock_CGIAR · Aug 10

It's a wrap! Thanks to the organizers @UvuviNa @BiovIntCIAT_eng @ILRI & #TALIRI. To our wonderful participants, thanks for your active participation & commitments to support a climate smart dairy sector for #Tanzania!
#ClimateSmartDairy_TZ
#OneCGIAR #SustainableLivestock

Birthe Paul and 6 others

5 16

Appendix 2 List of participants

Name	Position	Institution	Email contacts
Abdalla H. Ulega (MP) Hon.	Deputy Minister	Ministry of Livestock and Fisheries	barua@mifugo.go.tz
Aziz Mhukula	Assistant to Deputy Minister	Ministry of Livestock and Fisheries	aziz.daudi@uvuvi.go.tz, azizidaudi@yahoo.com
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Amos Nungu	Director General	Commission For Science and Technology	dg@costech.or.tz
Amos Omore	Principal scientist	ILRI	A.OMORE@CGIAR.ORG
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Bezia Rwongezibwa	Dairy production and training	Independent	rwongebezia@gmail.com
Birthe Paul	Scientist	Alliance of Bioversity & CIAT	b.paul@cgiar.org
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Erasto Ndauka	Partnership Coordinator	SAGCOT	enduka@yahoo.com
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Euster Kibona	Climate Change Advisor	Forum CC (Tanzanian Civil Society Forum on Climate Change)	eusterkibona@gmail.com, admin@forumcc.or.tz
Feddy Tesha	Director	Profate Investment Ltd	feddy_t@yahoo.com

Name	Position	Institution	Email contacts
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Name	Position	Institution	Email contacts
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Appendix 3 Agenda

Objectives

1. Increase awareness and buy-in on the importance of environmental issues and win-win solutions in smallholder dairy production among high-level stakeholders in Tanzania
2. Share knowledge, learnings, key insights and messages from research on dairy and environmental impacts in Tanzania that are relevant to decision-making
3. Arrive at commitments to action for climate-smart dairy development in Tanzania from policy and stakeholders

Agenda

Time	Item	Presenter
8.00 – 8.30am Arrival and registration - TALIRI and CGIAR		
8.30 – 9.00am	Official welcome from organizing team, recognition of guests	Prof. Erick Komba, Director General, Tanzania Livestock Research Institute (TALIRI)
9.00 – 9.20am	Self-introduction of participants, welcome, recap of December workshop, objectives of the event, agenda	Dr. Aichi Kitalyi, Development Facilitator and Dr. Birthe Paul, Scientist Alliance of Bioversity International and CIAT (CGIAR)
9.20 - 9.25am	Welcome remarks from CGIAR	Susanne Ngo-Eyok, Managing Director Africa of Alliance Bioversity International and CIAT (CGIAR) (online)
9.25 – 9.30am	Brief overview of research and welcome RAS (local representative)	Dr. Angello Mwilawa, Director Research, Training and Extension, Ministry of Livestock and Fisheries
9.30 – 9.35am	Welcome remarks from local authorities and welcome Guest of Honor for official opening	Dr. Elizabeth Mshote, Regional Administrative Secretariat (RAS), Dar es Salaam
9.35 – 10.05am	High-level opening address: Dairy and the environment – why the dairy sector needs to become climate smart	Hon. A.H. Ulega (MP), Deputy Minister, Ministry of Livestock and Fisheries
10.05 -10.10am	Vote of thanks to Guest of Honour, invitation to coffee break	Chali Thomas, Vice-President office
10.10 – 11.00am Coffee break, group picture and press briefing - CGIAR		
11.00 – 11.30am	Science briefing: Climate-smart dairy development in Tanzania – insights, key messages and recommendations from research (policy brief)	Prof. Erick Komba, Director General -Tanzanian Livestock Research Institute (TALIRI), Dr. Amos Omore, Principal Scientist and lead Maziwa Zaidi, International Livestock Research Institute (ILRI) (CGIAR); An Notenbaert, Senior Scientist Alliance Bioversity International and International Center for Tropical Agriculture (CIAT) (CGIAR)

Time	Item	Presenter
11.30 – 12.30pm	Panel discussion: Practical experiences and multi-sector perspectives on climate smart dairy development	Lucy Magembe, Country Director The Nature Conservancy (TNC); Dr. Prosper Makundi, Head of Environmental Unit at Ministry of Agriculture; Yusufu Selenge, Head of Environment Unit at Ministry of Livestock and Fisheries; Dr. George Msalya, Registrar Tanzania Dairy Board and Senior Lecturer Sokoine University of Agriculture, Semali Kisamo, agricultural policy expert USAID (online); Shakwaanande Natai, Coordinator Tanzania Climate Smart Agriculture Alliance; Feddy Tessha, producer and milk processing plant; Mark Txoso, Program Director, Tanzania Milk Processing, Heifer International
12.30pm – 13.00pm	Solutions for people and planet: Action and commitments from various actors	All participants and online, Dr. Aichi Kitalyi, Development Facilitator
13.00 – 13.15 pm	Next steps	Dr. Aichi Kitalyi, Development Facilitator
13.15 – 13.30pm	Closing remarks	Prof. Maulilyo Kipanyula, Director for Science Technology and Innovation, Ministry of Education, Science and Technology
13.30 – 15.00 Lunch		

Appendix 4 Speeches

OPENING REMARKS BY HON. ABDALLA H. ULEGA (MP), DEPUTY MINISTER, MINISTRY OF LIVESTOCK AND FISHERIES, TANZANIA MAZIWA ZAIDI: POLICY ACTIONS FOR CLIMATE SMART DAIRY DEVELOPMENT IN TANZANIA HELD ON 10TH AUGUST, AT SERENA

-Dr. Birthe Paul, **Workshop Chairperson, Farming System Scientist, Alliance of Bioversity and CIAT;**

-Dr. Angello Mwilawa, **Director for Research Training and Extension (MLF);**

-Dr. Asimwe Rweguza, **Director for Grazing lands and Animal feed Resources (MLF);**

-Dr. Amos Nungu,, **the Director General, Commission for Science and Technology (COSTECH);**

-Prof. Erick Komba, **the Director General, Tanzania Livestock Research Institute (TALIRI);**

Dr. Amos Omore, **ILRI Representatives, Eastern and Southern Africa;**

Representatives of the donor community;

Workshop Participants and media;

Ladies and gentlemen, invited guests,

Good morning. It gives me great pleasure to be here with you today for this important policy briefing meeting where I am informed we shall hear recommendations from researchers on how we can collectively transform the dairy sector in Tanzania to be both more productive and sustainable.

On behalf of my government, we are thankful to the team that conducted this research and has organized this meeting. The research team was led by the Tanzania Livestock Research Institute (**TALIRI**), the Alliance of Bioversity International and International Center for Tropical Agriculture (**CIAT**) and the International Livestock Research Institute (**ILRI**).

I am informed this is part of the **Maziwa Zaidi II program** that aims to catalyze an inclusive and sustainable development of the dairy value chain that is beneficial to all value-chain actors in Tanzania. Among others, the program draws on findings from 4 years of IFAD-funded research conducted by a team from the Alliance and ILRI in the Southern Highlands focusing on climate-smart feeding practices for our dairy cows.

I understand as well that today's meeting will build on the insights from a multi-stakeholder consultation on environmental management held in Arusha last December. One of the identified win-win entry points at the consultation was improved feeds and forages as a climate-smart intensification solution for dairy production.

Ladies and gentlemen, invited guests,

We have an opportunity before us to build a dairy sector that is future-proof, that can serve as an example to other sectors as well as to other countries.

As a government, we are aware that any socio-economic transformation that we commit to should be anchored in agriculture–the cornerstone of our economy–in order for us to achieve significant and sustainable impact on poverty reduction and economic development. Agricultural transformation continues to be a key priority in this sixth phase Government of Tanzania, like the previous ones.

Livestock can contribute significantly to our country's development agenda. We have great untapped potential within our borders. Eleven percent of Africa's cattle population is here in Tanzania. We have significant numbers of goats, sheep, pigs and chickens. Close to half of our population depend on livestock for their income in one way or another.

Yet, the productivity of our livestock is low. The sector contributes only about **7.4 percent** of our GDP, with an annual growth of less than **3 percent**.

Our livestock keepers, who are mostly smallholder farmers, face many challenges. They lack access to more productive, resilient animals, appropriate feed and water resources and animal health services. Our farmers need training in better herd management practices, business management and adoption of technologies to raise the productivity of their livestock. Our country's processing methods and regulations also need our attention, so that our livestock-related products can meet national and international market standards.

Our government has ambitions to build and invest in a livestock sector that, by 2025, is professionally and commercially run, modern and sustainable, uses improved and highly productive livestock to ensure food security and provides improved incomes for households and our economy, while conserving the environment.

Those plans are laid out in our **Development Vision 2025**, the ruling **party manifesto 2025**, Agricultural Sector Development Plan (**ASDP) Phase II** and, for the livestock sector, are mapped out in the Livestock Master Plan that was launched in 2019 by my Ministry, developed by Ministry staff with technical support from ILRI and financial support from the Bill and Melinda Gates foundation.

The livestock master plan pays special attention to developing the Dairy sector in Tanzania, because a productive, resilient dairy sector is a viable and necessary poverty alleviation strategy that can provide opportunities for income throughout the year.

Currently, our annual domestic milk production is about **3.4 billion litres**. We have a deficit of **9 billion litres**, which means that we are very far from meeting our population's demand for milk. And this supply gap is expected to widen as the population increases and climate change continues to impact the sector.

I am, therefore, pleased that part of the research presented today addresses one of the biggest constraints in our dairy production – what we feed our animals. Well-fed cows produce more and better milk. One of the greatest challenges our dairy farmers face is scarcity of appropriate quantities and quality of livestock feed. This challenge is not unique to Tanzania, it is a problem across Sub-Saharan Africa.

Ladies and gentlemen, invited guests

The ongoing COVID-19 pandemic has demonstrated the urgent need to focus on the overall resilience of our agricultural sector, to mitigate the negative socio-economic impacts of the pandemic and any future ones that may arise.

Modernizing and transforming dairy production in our country is, therefore, a key priority. Greater investment is needed in the sector.

However, any efforts we put in place will not bear fruit unless we address climate change – both the challenges it poses to the livestock sector and the impact that the sector itself has on climate change. Livestock are widely recognized as one of the key drivers of global environmental degradation, through increased nutrient loads, greenhouse gas emissions, water use, land degradation and land-use conversion. Livestock globally are responsible for nearly fifteen percent of the world's total greenhouse gas emissions.

Tanzania ratified the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol in 1996 and 2002 respectively and made legally binding emission reductions commitments and actions to address climate change.

The government has put in place measures, programs and policies to address climate change across key economic sectors. The country's agriculture development blueprint, the Agriculture Sector Development Program II is, by international standards, very climate smart.

Climate-smart dairy development is future proof, and we must aim for win-wins – for our people and for the planet. The implementation of climate smart practices and technologies in the livestock sector will go a long way to support the country's goals to reduce GHG emissions.

Your discussions today come at an opportune time where Tanzania and the rest of the world are engaging in dialogues on how we can make our systems more sustainable. We hope to see these efforts culminate in the UN Food Systems Summit in September 2021.

When I look around the room I see the faces of experts and stakeholders, both national and international, gathered here to focus on policy recommendations that are based on research and evidence. It is my firm belief that science should not only contribute innovative solutions to agricultural challenges, it should also provide an understanding of how to support smallholder farmers to adopt and scale-up these innovations.

I look forward to hearing how your deliberations can lead us onto a clear path, with concrete commitments and actions that will make our dairy system more resilient to climate change and shocks and that allows us to do our part in mitigating global climate change.

Ladies Gentlemen, invited Guests,

I assure the meeting participants of my government's support in the deliberations and on recommended follow up action. And with these few remarks I wish you all a very successful meeting.

THANK YOU VERY MUCH.

Hon. Abdallah Ulega (MP)

SPEECH BY PROF. MAULILIO KIPANYULA, DIRECTOR OF SCIENCE, TECHNOLOGY AND INNOVATION, MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY DURING MAZIWA ZAIDI: POLICY ACTIONS FOR CLIMATE SMART DAIRY DEVELOPMENT IN TANZANIA HELD ON 10TH AUGUST, AT SERENA HOTEL, DAR ES SALAAM, TANZANIA

- **Dr. Angello Mwilawa, Director of Research, Training and Extension, Ministry of Livestock and Fisheries;**
- **Prof. Erick Komba, Director General - Tanzania Livestock Research Institute (TALIRI),**
- **Dr. Amos Omore, Principal Scientist and lead Maziwa Zaidi, International Livestock Research Institute (ILRI);**
- **Government officials from various Ministries;**
- **Heads of various Public and Private Institutions in attendance;**
- **Workshop Facilitators**
- **Members of the discussion panel**
- **Members of the Press;**
- **Distinguished Guests;**
- **Ladies and Gentlemen;**
- **Good afternoon!**

First of all, I would like to thank the Almighty God for enabling me to stand before you today at this important closing Ceremony of **Maziwa Zaidi: Policy Actions for Climate Smart Dairy Development in Tanzania workshop.** I am delighted to be part of this policy dialogue**.** This is yet another opportunity that we gather to learn from each other and discuss how we can embrace policy actions for Climate Smart Dairy Development in Tanzania for socioeconomic transformation of our people.

I thank the Ministry of Livestock and Fisheries for inviting me to serve as Guest of Honour in this occasion. I also take this opportunity to commend the Organizing Committee for such a colourful event. And thank you all for attending the closing session.

Distinguished Participants, Ladies and Gentlemen;

I have been informed that this year's policy dialogue has attracted participants from various Ministries, Non-Governmental Organizations, distinguished scientists, international organizations, policy makers, and other stakeholders who have come together to discuss, share and exchange scientific knowledge that will eventually result into **Policy Actions for Climate Smart Dairy Development in Tanzania** for socio-economic transformation of our people. Indeed, policy dialogues and knowledge exchange in gatherings of this nature, generate resolutions which the government can use as evidence in making informed decisions that can transform lives of millions of our people.

Distinguished Participants, Ladies and Gentlemen;

I am pleased to note that the 2021 Maziwa Zaidi: Policy Actions for Climate Smart Dairy Development in Tanzania dialogue centered around three main objectives which are:

i. Increase awareness and buy-in on the importance of environmental issues and win-win solutions in smallholder dairy production among high-level stakeholders in Tanzania;

ii. Share knowledge, learnings, key insights and messages from research on dairy and environmental impacts in Tanzania that are relevant to decision-making; and

iii. Arrive at commitments to action for climate-smart dairy development in Tanzania from policy and stakeholders

I find that, the three themes are relevant, timely and aligns very well with the Government's aspirations to ensure that research and Innovation are at the heart of achieving the industrialization agenda and creation of jobs, as indicated in the National Development Vision 2025 and the Third Five Years Development Plan 2021-2026.

Distinguished Participants, Ladies and Gentlemen;

The fact that Research and Innovation are essential for achieving the Tanzania National Development Vision 2025 and the Third Five-Year Development Plan 2021-2026 aspirations cannot be overemphasized. They are the engine for sustainable economic growth, development and transformation. Certainly, Research and Innovation contribute new knowledge, skills and the requisite capabilities for increased productivity and welfare improvement of the population. The strategic role of research and technological innovation in uplifting other sectors of the economy such as; Agriculture, Industry, Health, Energy, Education, Environment, and services has been vividly highlighted in the Third Five-Year National Development Plan (FYDP III: 2021/22 – 2025/2026); Chapter five of the CCM manifesto 2020-2025; African Union- Agenda 2063 "The Africa We Want"; Science Technology and Innovation Strategy for Africa (STISA 2024); Sustainable Development Goals (Agenda 2030); and the recently adopted Paris Agreement on Climate change.

Distinguished Participants, Ladies and Gentlemen;

Realization of both internal and external plans, strategies and agenda, I have just mentioned, highly depend on availability of sound data and science-policy interface generated through research to provide strong evidence-based decisions for promoting poverty eradication and sustainable development. Again, this is also highly dependent on level of investment in scientific research, technology, and innovation based on our needs in its realities.

Distinguished Participants, Ladies and Gentlemen;

We all know that creation and transfer of scientific knowledge are critical aspects in building and sustaining socio-economic welfare and integration in the global economy. It is factual that, no country can remain simply a '**user**' of new knowledge generated elsewhere, but must also strive to become a **'creator'** of new knowledge that is relevant in the local context. Closing the existing knowledge gap between developed and developing countries is a necessary step and an indispensable responsibility of all research institutions; innovation and technology transfer must therefore become an important mission of such institutions. This could be in form of research products, services and simplifies publications like policy briefs.

Distinguished Guests, Ladies and Gentlemen;

There can never be a true and sustainable Dairy industry development without high quality research while embracing technological advances including Climate Smart Dairy Development in Tanzania and the whole African region. It is imperative that research institutions, such as TALIRI, must plan their research activities not only to focus on knowledge creation, but also to translate the findings into tangible products and services which directly benefit the local community. It is my humble appeal that the wonderful research excellences, we have discussed in this workshop, will not only end up with pear reviewed journal publications, but rather translate to our ability to solve real life, self and societal challenges; and prepare our society to adapt and adopt to such technological advances. This can only make sense if and only if we put special emphasis on innovation and invention for impact to radically change how social services are being delivered to the people to enhance their well-being and prosperity.

Distinguished Guests, Ladies and Gentlemen;

To be able to conduct research that solve real life challenges, we researchers, need to change our mindset and think outside our comfort zones in terms of types of research undertaken and become more innovative. We also need to close the communication gap between researchers – the government – industry to accelerate utilization of research findings and data. Critical thinking and creativity are key to remaining competitive and leaving our mark as a nation in frontiers of international science. To achieve that it is important to use the available limited resources wisely and cautiously to conduct quality and demand driven research by identifying and prioritizing research areas that are innovative and relevant in our local context and beyond.

Distinguished Guests, Ladies and Gentlemen;

Before I conclude my remarks, let me reiterate on the following:

a. Policy dialogues like the one we had today, are very important platforms for engagement between researchers and policy makers and should be conducted regularly to allow wide knowledge sharing and thus promote technology transfer;

b. All participants of this workshop take a closer look at how the resolutions made today on **Climate Smart Dairy Development in Tanzania** are relevant and link to socioeconomic development in a local and broader context. It is my belief that arguments which emerged during the plenary discussions will help researchers and policy makers in this room to see how best such research results could address policy and development agenda gaps for the betterment of socioeconomic development;

c. TARILI and other research and development to continue undertaking both basic and applied research on **Climate Smart Dairy Development in Tanzania** with a primary objective of creating innovative solutions to address dairy farmers challenges, in cities as well as in rural areas; and

d. We must embrace firm partnerships between research and institutions and the industry so as to harness the full potential of Climate Smart Dairy Development in Tanzania. By establishing strong links with the industry, we stand a better chance of strengthening our research and innovation programmes.

Distinguished Guests, Ladies and Gentlemen;

As I conclude my speech, I would like to congratulate the Ministry of Livestock and Fisheries for organizing this policy dialogue. I also want to thank partners who have willingly supported this workshop and the broader agenda to promote **Climate Smart Dairy Development in Tanzania** for sustainable socio-economic development. Let me once again thank the organizers for inviting me to be part of this important workshop.

Having said that, I wish you safe journeys as you travel back to your work stations. Let us all continue to take precautions against COVID-19 which continue suffocate the world.

With these few remarks, it is now my pleasure and honour to declare that the **Maziwa Zaidi: Policy Actions for Climate Smart Dairy Development in Tanzania** is officially Closed.

Thank you for your attention

Appendix 5 Press Release

New research maps concrete steps to sustainably grow Tanzania's underperforming dairy sector

Actions must consider climate change adaptation and mitigation to make the sector future-proof, scientists caution

Dar es Salaam, Tanzania, 10 August 2021_ Tanzania should increase investments in animal breeds, feed and animal health in its dairy sector, research has said. Otherwise, an existing supply gap for milk could worsen by more than 75% over the next 5 years.

Tanzania has more than 10 percent of Africa's cattle within its borders, but productivity is far below its potential. Dairy farmers need support to adopt new technologies and receive training to raise the productivity of their animals, while adapting to and mitigating climate change.

"Through our research we've seen that improved feeding and forages, together with better livestock genetics and health, can deliver synergetic win-win outcomes for the people and planet," said Dr. Birthe Paul, a scientist at the Alliance of Bioversity International and CIAT. "If skillfully implemented, dairy farmers can nearly double farm-level productivity and reduce greenhouse gas emission intensities by half."

The research was carried out by Tanzania's Livestock Research Institute (TALIRI), in collaboration with CGIAR scientists from the Alliance of Bioversity International and International Center for Tropical Agriculture (CIAT) and the International Livestock Research Institute (ILRI). It shows that investments in the development of a sustainable dairy sector in Tanzania could deliver a double win for the country's food and income security, and economic development, and at the same time, contribute to efforts to protect the environment.

Livestock are an important source of nutrition and provide income for millions of smallholder farmers. They–especially beef and dairy cattle–are the highest contributors to global greenhouse gas (GHG) emissions within the agriculture sector and are key drivers of environmental degradation.

Findings from the research are in line with the Tanzanian government's ambitions to build a modern and sustainable livestock sector by 2025, that is professionally and commercially run to ensure food security and provide improved incomes for households and the economy, while conserving the environment.

"Modernizing and transforming dairy production in our country is a key priority for this government. However, we can only succeed if we take into consideration climate change – both the challenges it poses to the livestock sector and the impact the sector has on climate change," said Deputy Minister Abdallah Ulega (MP) of the Livestock and Fishery Ministry.

Hon Ulega is also the guest of honour at a policy briefing today in Dar es Salaam, where policymakers and other key stakeholders will hear policy and investment recommendations emerging from the research.

While improved forages can deliver multiple benefits of the livestock sector in Tanzania and in the lives of smallholders farmers, the uptake of improved forages remains relatively low in Tanzania and requires concerted action by stakeholders, noted Prof Erick Komba, one of the lead researchers and Director General of TALIRI.

“We need to invest in training, extension and knowledge dissemination to increase capacities in and adoption of improved feed and forage management. We also need investments from diverse donors to scale up climate-smart dairy development across the country”, added Dr. Angello Mwilawa, Director for Research, Training and Extension at the Ministry of Livestock and Fisheries, also involved in the research.

The team also stressed the need to de-risk private-sector investments in climate-smart dairy development using funds from public and non-governmental organizations and the need for multi-sectoral policy cooperation at local and national levels between various ministries working at the livestock-environment nexus to strengthen the role of livestock as solution to climate change mitigation and adaptation.

The briefing on 10 August is conducted as part of the Maziwa Zaidi II program, part of the CGIAR Research Program on Livestock, that aims to catalyze an inclusive and sustainable development of the dairy sector that is beneficial to all value-chain actors in Tanzania.

The research draws, amongst others, on recommendations from a four-year IFAD-funded research project conducted by a team from the Alliance, TALIRI, CSIRO and ILRI in the Southern Highlands focusing on climate-smart feeding practices for Tanzania’s dairy cows.

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Ministry of Livestock and Fisheries

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CGIAR RESEARCH PROGRAM ON Livestock

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