

# Livestock

## A DRIVER FOR ECONOMIC DEVELOPMENT



**Proceedings of 25<sup>th</sup> Anniversary and Conference  
of the Ethiopian Society of Animal Production (ESAP)  
Held at Haramaya University, Ethiopia,  
August 24-25, 2017**



**Ethiopian Society of Animal Production  
P.O.Box 62863, Addis Ababa, Ethiopia**

# Livestock

**DRIVER FOR ECONOMIC DEVELOPMENT**

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Dr Getachew Gebru  
President, Ethiopian Society of Animal Production  
Ethiopian Society of Animal Production (ESAP)  
Addis Ababa, Ethiopia

An Anniversary message from Dr Siboniso Moyo, ILRI's Director General's representative in Ethiopia on  
the occasion of ESAP@25 years

On behalf of the Director General of the International Livestock Research Institute (ILRI), Dr. Jimmy Smith, myself and the entire ILRI family, I would like to extend my heartfelt congratulations to the Ethiopian Society of Animal Production (ESAP) on the occasion of its 25<sup>th</sup> anniversary.

Our sincere congratulations to those who have guided, shaped and sustained ESAP for the past 25 years. ESAP is cherished for its services for the development of the Ethiopian livestock sector through the years. It is a livestock development advocate known as a reliable and multidimensional platform and knowledge hub for animal scientists, policy makers, farmers and other stakeholders.

I would like to take this opportunity to acknowledge ESAP's contributions during the development of the Ethiopian Livestock Master Plan (LMP) and the drafting of the new animal breeding policy, both of which are significant in the transformation of the Ethiopian livestock sector.

For more than two decades, ILRI has been engaged in a vibrant partnership with ESAP. Our partnership and collaboration have been founded on shared values and visionary ideals. We wish to highlight the success we have had through a number of capacity building initiatives.

We are pleased to note that a number of former and /or current ILRI staff are members of ESAP. This would further strengthen our engagements in the area of knowledge generation and dissemination which includes organizing national conferences, initiating policy dialogues and conducting studies among others.

*Patron: Professor Peter C Doherty AC, FAA, FRS  
Animal scientist, Nobel Prize Laureate for Physiology or Medicine-1996*

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We celebrate the successes and accomplishments of the previous, and anticipate the coming years with more productive partnership to contribute to the transformation of the Ethiopian livestock sector together, and make a difference in people's lives.

In this year's conference which was held from 24-25, August 2017 at Haramaya University, ILRI was represented by a delegation of ten led by Dr Ian Wright, ILRI's Deputy Director General who gave a keynote address on Livestock and the Sustainable Development Goals. We also had an opportunity to hear from Dr Okayo Vwai, the Principal Scientist of ILRI and Project Leader of the African Dairy Genetic Gains (ADGG) Project funded by the Bill and Melinda Gates Foundation. Other ILRI staff participated in panel discussions, facilitated sessions and manned the ILRI display. All these were our efforts to engage and celebrate with the ESAP family.

Once again congratulations on this milestone. Happy Celebrations,

Yours Sincerely,



Dr. Siboriso Moyu  
Director General's Representative in Ethiopia  
International Livestock Research Institute



## Opening Speech

Honourable Guests,  
ESAP members and Participants,

Ladies and Gentlemen,

On behalf of the Federal Democratic Republic of Ethiopia, Ministry Livestock and Fisheries and myself, I feel honoured in being amongst you today to officiate the opening of **Ethiopian society of Animal Production Silver Jubilee Celebration Livestock – a Driver for Economic Development 25th Annual conference.**

As it is well known to you all, The Federal Democratic Republic of Ethiopia developed broader national development plans for all sectors that presumed to propel Ethiopia into middle income countries by 2025. As set forth in the second Growth and Transformation Plan (GTP II) and other strategies, reaching this goal will require boosting agricultural productivity, strengthening the industrial base and fostering export growth. Cognizant to this, the federal Democratic Republic of Ethiopia developed series of clear and broader national development plans that span over time horizons to 2025. Amongst these development plans is the Growth and Transformation Plans (GTP I and II), Climate Resilient Green Economy (CRGE), the Livestock Master Plan (LMP) and other strategic development goals that play key roles in supporting our national development goals.

Ethiopia is working towards increasing productivity of its livestock and livestock products within the framework of GTPII. It is projected that milk will increase by about 93% and red meat production from cattle, sheep, goats and camel will increase to over 1.5 million metric tons by 2020. This is a huge task and targeted not only towards meeting the local demand, but also to increase the export volume and also reach to new markets, especially in meat products. More than any time in the history this country, there seems to be a strong political will to give due emphasis to the Livestock sector.

This arises from the increasing demand of livestock and livestock products driven by population as well as economic growth. This increase in demand of livestock products is also necessitating establishment of

different actors along the value chain viz. feed industries, transporters, quality assurances agencies etc. Consumers are also increasingly becoming concerned about the quality and safety of what they consume consequently requiring the application of legal framework to protect them.

Government realized that it is becoming increasingly important to improve the overall performance of the livestock development program to remain competitive in the international market.

MoLF support ESAP effort in promoting the advancement of livestock production towards fostering interest in quality, academic standards and relevance in livestock research. It has been fostering interaction and promoting discussions towards appropriate policy options to improve livestock productivity. For the past 25years ESAP was actively engaged in raising livestock development and policy issues. Every year ESAP's annual conference stages selected lead thematic areas that reflect on key livestock issues that have a development and policy relevance. ESAP will be celebrating its 25th Jubilee anniversary this year with a theme of "*Livestock – A Driver for Economic Development*"

The objective of this conference is Creation of a conducive platform where all stakeholders (policy makers, development planners, private sector ...etc) discuss the role of Livestock sector Development towards transformation agenda, achievement in livestock development and looking for options in overcoming the challenges and gaps based on research and common understanding between stakeholders, both at national and international ones.

The Silver Jubilee Celebration and 25th Annual conference is expected that the national, as well as Global experiences on the topic will be shared at the plenary session. **The** marking of the Jubilee anniversary, include Panel discussions Exhibitions, and shows. The focuses of panel discussions among others includes, livestock development policy and strategies, climate change and livestock systems, the role of livestock as an economic driver in Ethiopia: lessons learned, gaps, and the way forward.

This is also a time for all members of ESAP to look back and reflect what the society has achieved over a quarter of a century and based on lessons

learned define its future role as a society. I would like to emphasize that a society can only exist when its members support its cause and be an advocate of the sector and the profession of animal science where ever they live and work. A society can only grow, when its members undertake research that has relevance to the livelihood of livestock keepers, where members publish and bring their results to the scientific community, through different ways and where members avail themselves to assist the implementation of livestock development agenda of the government.

From the conference and this events it is expected that livestock sector development achievements, challenges and future directions in Ethiopia will be discussed and the way forward put on the future directions and role that professional and private sector and all stakeholders should play will be forwarded

On this junction I would like to congratulate ESAP executive committee, the organizing committee for organizing such important national event. I also want to thank Haramaya University, FAO, ILRI and other stakeholders for supporting the event.

Finally, I wish you all very pleasant and fruitful deliberations and discussion. I declare that the conference is officially opened.

Thank you!

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## PLENARY SESSION

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### Introductory Session



ESAP's 25 Core Committee Chairman, Ato Belachew Hurisa, explained the objectives of the two-day's events to ESAP members and invited ESAP's President Dr. Getachew Gebru to make a welcome address pertaining to the 25<sup>th</sup> Ethiopian Society of Animal

Production Silver Jubilee Celebration and Conference.



The official opening and launching of the event was followed by a welcome address of Professor Chemed Fininisa, President of Haremaya University and finally the event was officially launched after His Excellency Prof. Fekadu Beyene Minister of Livestock and

Fisheries delivered the inaugural speech.

The medal and certificate awarding ceremony to recognize both the deceased and active Founding Members of ESAP was a thunderstorm from the blue as heralded by Dr. Kefena Effa, Chairman of ESAP Award Sub-committee. It was one of the entertaining events of ESAP Silver Jubilee Anniversary.

## The Report

We have attempted to synthesize the papers presented. The presentations fall into two categories- The sustainability issues of livestock production and the general policy and strategy aspects of livestock production, which formed the basis for the agenda of the panel discussion. The summary of the presented papers are as follows.

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### Global Trends for Sustainable Livestock Production

*Dr. Alemu Yami*

*Food and Agricultural Organization of the United Nations (FAO), Addis Ababa Sub-Regional Office*



In this paper, the major highlights indicated were the general situation of the global livestock sector, trends in livestock production, trends with respect to demands, projection with respect to livestock production along with its sustainability livestock production at a global level. Dr.

Alemu Yami stressed on the issue of sustainable livestock production. Unless livestock production is sustainable, it is very difficult to pursue and have adequate animal source foods to sustain the ever-increasing global human population. The role of livestock science and technology has been mentioned as one of the major drivers of livestock development. The role of livestock sector is highly dynamic and it is characterized by many natural and artificially fabricated factors. In this regard, the scale and scope of livestock production differs between the developing and developed countries, geographical locations, and stage of economic development.

In most of the developing countries in general and in Ethiopia in particular, livestock has major contribution to GDP of the country's economy. The other driver of economy is urbanization due to improvement in infrastructure and the rising income of people who would be in a position to avail expenditures for investing in livestock businesses. Consumption of milk and meat is also on the rise driven by rapidly increasing population, urbanization and shifting consumer preferences towards value added animal source foods. Such developmental trends need to be sustained by addressing not only the livestock development, but also by tackling social and economic challenges. There is also a tendency where the number of livestock is increasing and entails the maintenance of productivity per unit animal. Number of poultry is rising and it requires appropriate management strategy to sustain a high level of benefits accruing to both the producers and the consumers. The need to be vigilant in maintaining a sound breeding policy and putting in place a well-streamlined animal health services and feed development are important since they all contribute towards economic development. The future demand for livestock products matter a lot since in developing countries animals could lose weight and hence become less productive and render inferior products. These in turn affect the future trend of livestock production and projection and consequently fail to enhance economic development.

Science and technology are necessary inputs to play a major role as an economic driver. The area of livestock nutrition, disease, and health are major concerns for those who are involved in the area of livestock development. Among several issues, the paper came up with several driving forces that change future trends. These include paying attention to enhancing human resource/capacity development, protecting natural resource bases, improving resource efficiency, balancing human benefits and last but not least, paying attention to the effect and impact of climate change which affects everybody on the planet.

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## The Role of Livestock in Achieving the Sustainable Development Goals

*Iain A Wright, Deputy Director General for Integrated Sciences  
International Livestock Research Institute (ILRI)  
Nairobi, Kenya*



Dr. Iain Wright focused his presentation on the fact that nowadays, there are unprecedented opportunities for livestock sector to flourish in the developing countries. A lot is being heard about the importance of crops such as wheat, rice... etc. in global agricultural economies. Nevertheless, very few people realize that if one looks at the bottom of one's agricultural commodities, five of the highest global value commodities such as milk and poultry products are from the livestock. Only rice gets to the top five since there are quite a number of countries using it as their staple food. This is about a good example of livestock when it comes to global debate in agriculture. There is also unprecedented growth in demand for animal source foods, particularly in Africa and Asia.

Meat, pork, poultry, eggs, and milk are leading the way in consumption of livestock products. This is due to a huge increase in demand driven by population growth as well as driven by increases in income. As people get disposable income, their propensity to consume more of livestock products also gets higher. Urbanization is also another phenomenon to increase the consumption of foods.

Dr. Iain discussed that it is to be remembered that in September 2015, member States of the United Nations, adopted a new strategic development goal known as "The Sustainable Development Goals (SDGs)" that comprehends 17 strategic development goals and 169 targets.

It was stated by Dr. Iain that with regard to the livestock sub-sector, there are four pathways for achieving all 17 SDGs. These include:

- Livestock for inclusive and sustainable Economic growth;
- Livestock for equitable livelihoods;
- Livestock for human health and nutrition; and
- Livestock for sustainable ecosystems

### **Contribution of livestock to achieve the SDGs**

The livestock sub-sector is one of the fastest growing agricultural sectors in the world. The market value of animal source foods in Africa by 2050 is estimated at USD151 billion. Thus, number one pathway and contribution of the livestock sub-sector to the national growth is its contribution to economic growth. The livestock sub-sector contributes at least 40% of the agricultural GDP in developing countries. In Ethiopia, it reaches up 50%; and that percentage is expected to grow. From this perspective, the livestock value chains provide large numbers of employment and jobs to a large number of people across various number of value chain. It has also huge potential to increase productivity and income.

The role of smallholder farmers in livestock production in most of the underdeveloped world is very significant making the smallholders still to dominate livestock production in many countries. This raises the issue of how the increased demand for livestock products is going to be met. Dr. Ian emphasized on the fact that for a continent like Africa, there are three possible scenarios.

- Africa will continue to import food;
- Commercialize smallholder sector; and
- Encourage younger generation to engage in smallholder farming system.

The second pathway by which livestock contribute to sustainable development goals is that 70% of the world's rural poor rely on livestock as their major source of livelihoods. Of the 600 million poor livestock

keepers in the world, about two-thirds are rural women and 100 million landless people keep livestock.

For the vulnerable, up to 40% of benefits from livestock keeping, are non-market, intangible benefits, mostly insurance and financing. In the poorest countries, livestock manure comprises over 70% of soil fertility amendments. Many poor people are employed in local informal livestock product markets while 90% of animal products are produced and consumed in the same country or region and over 70% of livestock products are sold 'informally' in an informal markets.

The third pathway by which livestock could contribute to sustainable development goals is through improving nutrition and health because animal source foods provide essential nutrients. When exposed to shortage of food, some people of the world could be hit by chronic hunger, some will have inadequate intake of food, and some suffer from becoming overweight or obese. Only a few people who are enjoying balanced diet.

The fourth pathway by which livestock could contribute to sustainable development goals is to maintain and manipulate ecosystem in such a way that ecosystems become friendly and support livelihoods. The intensity of current greenhouse gas emissions generated from livestock production need attention because when methane gas production falls productivity of livestock increases. The potential of agricultural sub-sectors to store carbon by 2040 is a promising trend if we could sustainably develop our livestock in futures by enhancing sustainable investments. Continuing to pay insufficient attention to this fastest growing agricultural sub-sector will thwart progress in achieving the SDGs.

The paper suggests five points as a ways forward.

Continue building evidence base for the global livestock for sustainable research and development agenda;

Articulate the evidence powerfully;  
Tailor different messages to suit different audiences;  
Unite reliable data with strong narratives; and  
Create greater coordination within the sub-sector



## **The Agenda 2063 and Strategies Guiding Animal Resources in Africa**

*Mphumuzi Sukati*

*AU/IBAR*

*Nairobi, Kenya*

This paper outlines one of the most prominent outstanding issues regarding the African Union Agenda called Agenda 2063. It elaborated in details the constituents of the key strategic frameworks guiding agriculture and animal resources development in Africa. Dr. Sukati outlined in details the African Union (AU) aspirations of the Agenda 2063 and the role of animal resources in Africa.

The paper has also revealed the most important aspects of Comprehensive Africa Agriculture Development Program (CAADP) and MALABO declarations as well as Livestock Development Strategy of Africa (LiDESA) including the policy framework and reform strategy for fisheries and aquaculture in Africa. The author indicated and described the kind of “Africa we want” by outlining the action plan needed to achieve this goal.

Agenda 2063 of the AU is a vision and strategic framework for the socio-economic transformation of the African continent over the next 50 years by building on and accelerating existing continental initiatives for growth and sustainable development. In other words, the plan calls for an integrated, prosperous, and peaceful Africa, driven by its own citizens that represent a dynamic force in the global arena. To achieve this, an effort by all sectors of society is required.

Agenda 2063 of AU has its own aspirations. What are these aspirations? Africa wants a prosperous Africa based on inclusive growth and sustainable development which calls for:

An integrated continent, politically united and based on the ideals of Pan-Africanism and the vision of Africa's Renaissance;

An Africa of good governance, democracy, respect for human rights, justice and the rule of law;

A peaceful and secure Africa;

An Africa with a strong cultural identity, common heritage, shared values and ethics;

An Africa whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children; and Africa as a strong, united and influential global player and partner

Are these aspirations going to be achieved without livestock and fisheries?

The Answer is no; and here is why? Africa needs a prosperous Africa based on inclusive growth and sustainable development by:

Eradicating poverty and achieving high standards of living for all;

Ensuring well-educated citizens and skills revolution underpinned by science, technology and innovation;

Modernized infrastructure;

Structurally transformed economies to create growth, decent jobs and economic opportunities for all;

Modernized agriculture; and

Preservation of the environment and ecosystem

The paper moreover pointed out the need for an integrated continent, politically united, and based on the ideals of pan-Africanism promotes its vision of the African renaissance that calls for Africa to be united. The author stresses that without livestock and fisheries this will not happen. Moreover, it is the desire of the Agenda 2063 that Africa will be an integrated continent, with seamless borders that will have dynamic and mutually beneficial links with the Diaspora.

Also Africa expects climax conditions where all remnants of colonialism and oppression are ended by 2020 and as a result, free movement of people, goods, capital and services flourish to increase trade and investment among countries. To further accelerate this situation, a highly developed infrastructural networks put in place are necessary to enhance a speedy integration and growth of the continent.

The objectives of the ecosystems approach in Malabo Declaration and in CAADP Process have also been mentioned to consider commitments to:

- Principles and values of the CAADP process;
- Enhancing investment and finance in agriculture;
- Ending hunger in Africa by 2025;
- Halving poverty by the year 2025 through inclusive agricultural growth and transformation;
- Boosting intra-African Trade in agricultural commodities and services and triple intra-Africa trade in agricultural commodities; and
- Enhancing resilience of livelihoods and production systems to climate variability and other related risks

The presentation in this paper also outlined Livestock Development Strategy of Africa (LiDESA). The strategies are:

- To attract public and private investments along the different livestock values chains;
- To enhance animal health and increase the production, productivity and resilience of livestock production systems;
- To enhance innovation, generation and utilization of technologies, capacities and entrepreneurship skills of livestock value chain actors; and
- To enhance access to markets, services and value addition

Policy framework and reform strategy for fisheries and aquaculture in Africa as envisaged in the Agenda 2063 include:

Conservation and Sustainable Resource use

Small-Scale Fisheries Development  
Sustainable Aquaculture Development  
Responsible and Equitable Fish Trade and Marketing  
Awareness Enhancing and Human-Capacity Development  
High Seas Fisheries



## How Would Sustainable Livestock System Contribute To Health, Nutrition, And Sustainable Livelihood In Ethiopia?

*Prof. Michele Wattiaux and Dr. Heidi Busse,  
University of Wisconsin, Madison, USA*

Prof. Michele focused his presentation on the aspects of health, nutrition and its contribution to sustainable livelihoods in Ethiopia. The basis of their presentation emanated from experiences of Wisconsin's Dairy Science Department as well as from dairy farm systems of the Ethiopian context representing tropical conditions.

Prof. Michele discussed that with regard to the development dairy sub-sector in Ethiopia, there are lots of opportunities and challenges. The challenges that exist are human power; lack of animal health services and shortage of animal nutrition. Total productions of protein supply versus available protean needs were shown based on the study conducted by FAO on 163 countries where the share of Ethiopia showed eight grams per person per day of animal source protein. The human need for animal source protein is seven grams per person per day. If humans do not get access to this standard nutrition will set in and becomes a global issue.

There is a prevalence of protein shortage whether one is rich or poor. Ethiopia has a low GDP when compared to other developed nations. However there is a great potential to increase dairy sector in a sustainable way. There is also a need to work at household level to understand

nutrition. The question arises as to who, where and how could additional/surplus milk be produced?

Prof. Michel emphasized on the fact that when one talks of sustainability, first, one has to look at the natural and biological resources available. To exploit the available resources, one has to understand the social, cultural, political dimensions of a society. In the wake of this presentation, an interesting definition of sustainable agriculture has evolved. It is a formal definition of the United States Department of Agriculture (USDA).

*Sustainable agriculture is defined as” an integrated system of planning, acting, and practicing having site specific. Sustainability is a concept that applies globally, nationally, regionally down to the community, down to the farm, down to the household, down to each of us, we can live sustainable life, and we can constantly live whole life.”*

The presenter emphasized the impotence of food production and fiber and concluded that sustainability has economic component, environment component, and social component. The three go hand in hand. economic issues to sustainability of issues relate to economic, social and environment sometimes referred to as the three Ps-(profit, people and plan) These 3 Ps interact together to produce sustainable development.

Since, the presenter thinks that at times he said, “...it is important to ask questions instead of focusing on answers.” Hence, the following good questions are to be asked in the form of recommendations and constituting the way forward.

What factors are there to influence the production systems of dairy industry?

Why milk estimate progress has been made as it has been?

What production system could impact nutrition, household, livelihoods in the communities throughout Ethiopia?

What production system can be put in place in propelling its potential to improve nutritional status of both urban and rural set up in Ethiopia?

How can these issues be addressed as part of the solutions?

Who would decide and set these goals and the kind of production system that should exist in the future?



## **Livestock policy and strategy: The livestock Master Plan for GTP II and beyond in Ethiopia**

*H.E. Dr. Gebregziabher Gebreyohannes*

*State Minister Ministry of Livestock and Fisheries of Ethiopia (MoLF)*

This paper explained livestock policy and strategy as well as the country's grand livestock plan called Livestock Master Plan (LMP) in line with the country's Growth and Transformation Plan (GTP II). Despite that these plans emerged within recent years, it is a high time that the aspirations of those people engaged in livestock sector need to use all of their expertise knowledge to develop the immense livestock potential the country has overlooked for some time.

The paper had also gone into several spheres of livestock development and the relevant components making the livestock sector viable and has been elaborated at length. In scrutinizing the contribution and roles of livestock to the economy of the country, it is evident that the process of embarking on livestock development needs to go hand in hand with the GTP II, since livestock is part of agricultural sector. Land, labor, and capital are very important economic parameters to develop the agricultural sector because in Ethiopia 85% of the farming communities are found in rural areas where there is a need on the part of the government to provide goods and services. Ethiopian agriculture is vulnerable to various natural and manmade disasters such as drought that could eventually caluminate in poverty and famine that are common in Ethiopia.

These situations had caused a dependency syndrome on the part of the peasant population to look for food aid. The government should embark on a free market livestock production. Thus the objective of the strategy is to build a highly vibrant agricultural production system whereby the rural economic growth is accelerated so fast so that the rural agricultural commodity producers get their share of the lion in order to improve their livelihoods.

Not only that, the country requires growth in agriculture and at the same time growth in industry has become a fundamental requirement for the country to develop economically. This is why the GTP II has become known and adopted as a tool to help achieve this necessary goal. GTP II is further expected to ensure the industrial growth and development of the country because Ethiopia is virtually an agricultural country where it caters for about 80% of its rural population. What the country needs is a sustainable investment strategy that calls for huge infrastructural development to assist investment to grow everywhere.

There is a positive indication that the country is able to boost grain production from 70 million quintals to 180,000,000 million quintals. The other important and yet challenging issue is being able to embark on a free market system which would guarantee to achieve a higher level of agricultural production. On the other hand, unless other sectors grow, it is likely that agriculture alone would not grow considerably.

He Excellency states that with population explosion of the country, livestock production may not adequately address the demand of the consuming society. This is bound to create huge gap between demand and consumption and supply to be narrowed. The Livestock Master Plan (LMP) was developed transform the livestock sub-sector to fill the gap between the domestic demand and supply for animal source foods and provide the surplus for export market.

This paper has also come up with the latest strategies related to the development of agro-industry complexes where agro-industrial parks are

built to manufacture integrated commodities aimed at financing the country's economy. To this effect, continuous efforts are being exerted to establish Rural Transformation Centers in selected agricultural corridors. So far there are 17 agro-industry parks expected to start production. As last, but not least, H.E believes that there is still a need to increase the supply side of inputs to the farmers.



### **Show case ADGG: A real time and digitalized national dairy data base currently being built at National Artificial Insemination Center (NAIC)**

*Okeyo Mwai., Kefena Effa, Julie Ojango, Joh Gibson, Mzeck Chagunda, Enyew Negussie and Raphael Mrode*

For many years, we have been talking about livestock breeding program through by keeping dairy records of some kind. To a certain degree, dairy records have been kept at different dairy farms in the country to evaluate performance of the animals. However, this was done physically on preprinted forms or formats, which at times get lost when farm managers are transferred from one area to the other or misplaced and left in highly disorganized archives where no one could have access.

Now, with the latest technology, there is a breakthrough where it is possible to keep livestock (dairy) records and build a digitalized livestock (dairy) database.

Dr. Okeyo Mwai stated that the program has three highly interrelated objectives.

To establish National Dairy Performance Recording Centers (DPRCs) for herd and cow data collection, synthesis, genetic evaluation and timely farmer-feedbacks (*5 Regions in ET-100,000 herds by year 3*).

To develop and pilot an ICT platform (FFIP) to capture herd, cow level and other related data and link it to DPRCs and feeds back key related herd/cow summaries, dairy extension and market information etc. (*Feedbacks that objectively inform farmer decisions*).

To develop low density genomic chip for breed composition determination and related bull certification systems for crossbred bulls (*at least 20 young certified bulls drafted for semen production/natural service per country*)

Dr Okeyo also mentioned some of the challenges that can potentially deter the adoption of digitalized data capturing and feedback system. These include:

- Digital literacy-slowed progress;
- High staff turnover for the system developers and programmers;
- Limited internet coverage and connectivity
- Too complex data forms (meeting the varied and sometimes conflicting partner demands)

Dr. Okeyo concluded that this is a digital age there is a need by African countries to adopt newly emerging technologies that can propel the development of livestock sub-sector to a new height in Africa.

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### **Introducing animal feed exoteric “SAFE” software package: joint work of ACDI VOCCA VDFACA and the Ethiopian Feed Industries Association**

*Beruk Yemane*

It was perceived that there had been no scientific way of formulating animal feed in the past. The paper presented by Ato Biruk Yemane had brought about good news that one could use software package to calculate and be able to formulate his/her own ration for different types/classes of animals in question. Different governmental organization (GO), feed industry associations, and NGOs are collaborating to promote the importance of this new and innovative and knowledge-based animals feeding.

# Role of Research in the Commercial Transformation of the Livestock Sector

*Berhanu Gebremedhin*

*Principal Scientist- Agricultural Economist*

*ILRI*

Subsistence and commercialized livestock sector	
Subsistence	Commercialized
<ul style="list-style-type: none"><li>• Sustain supply of draft power (cattle-highlands)</li><li>• Livestock products for domestic use (all species)</li><li>• Store of wealth (small and large ruminants)</li><li>• Cash sources when needed, not necessarily emergency needs (esp. small ruminants)</li><li>• Dependence on own inputs (mostly natural)</li><li>• Low profit orientation</li></ul>	<ul style="list-style-type: none"><li>• Income earning enterprises (all species)</li><li>• Primarily produced for the market</li><li>• Market signals lead production decisions</li><li>• Dependency on purchased inputs for the most part</li><li>• High profit orientation</li></ul>
The transformation Process	
<ul style="list-style-type: none"><li>• Overtime subsistence farming is not a viable activity for safeguarding food security and welfare</li><li>• The Process:<ul style="list-style-type: none"><li>– Initial reaction - diversification (addition of new enterprises)</li><li>– Gradual shift to specialized production</li><li>– Movement away from spot markets to some forms of vertical coordination</li></ul></li></ul>	

## Commercialized livestock sector

- Market orientation in production planning
- Market participation in output markets



## The Value Chain



- Value chain actors: Actors involved in ownership of a commodity and its value addition
- Value chain service providers

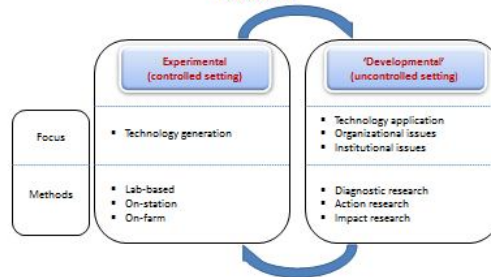


## Research for the transformation of the livestock sector

- Means research to support the development of the livestock value chains
  - Production technologies
  - Input supply system
  - Services – extension, finance, insurance
  - Post-harvest handling and processing practices
  - Marketing and distribution
  - Policies and institutions supporting the value system



## Experimental and Developmental Approaches to research



## Types of 'Developmental' Research

- **Diagnostic**
  - Research conducted to identify, describe, quantify value chain constraints and opportunities, and technological, organizational and institutional intervention requirements
- **Action Research**
  - Research aimed at generating qualitative and quantitative knowledge on the development process and performance of a single or combination of interventions, which can be used to modify the interventions, and/or identify context specific adoption factors that can be used to scale out/up best practices
- **Impact research**
  - Research aimed at generating qualitative and quantitative knowledge on the impact of interventions on economic, social and environmental conditions of farm households.

### 'Developmental' research - Examples

- Community-based small ruminant breeding
- OSMAI action research
- Collective action for grazing land management
- Market sheds for small ruminants
- Collective action for livestock marketing
- Collective action for livestock input supply
- Impact evaluation of livestock value chain interventions



### The Take-away

- Focus on experimental (controlled) research
- Need to give better emphasis on 'developmental' research in a multidisciplinary approach



## Some questions and issues related to presentations

There were some participants who asked for clarifications on issues related to some of the presented papers. Perhaps these questions and issues could contribute to further understanding of some salient points delivered in the paper and they are worth recording them.

### On AU Agenda 2063

The issue of market integration;

If there is any modality to partner with ILRI; and

On MALABO and CAADP declaration -whether it factors into UN development goals

## On livestock policy and strategy: The Livestock Master Plan and GTP II and beyond in Ethiopia

The presentation was indeed very broad. We have been hearing this for the last 10 years. However, the LMP is currently 2 years down the road since its inception. What actions are being taken to achieve the set targets? And what site specific strategies have been designed to target the different landscapes of the country?

Sixty percent of the country's land mass lies in the dryland areas in which rangelands account for the largest part of it. To this effect, there is no focus on the rangelands. Secondly, with regard to dairy development, the previous cattle multiplication ranches like Abernosa, Gobe, and Metekel; do not currently exist as most of them are given away to investors. This is not reflected in the Livestock Master Plan. So, how are we going to boost our dairy sector and increase milk production?

The presenters responded to some of the pertinent questions though some of the justifications and arguments provided did not satisfy the challengers. The presentations were eventually followed by tailored panel discussions on topics that warrant to attract special attentions by policy makers, development planners and researchers.

# Panel Discussion I and II

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## Topic 1: Higher Education and Research in livestock: Roles and Relevance to the Government of Ethiopia Plan



One of the major issues raised was on how the educational curriculum of animal sciences in higher education should be shaped in order to cultivate high quality graduate students and the researches that these institutions should

conduct in order to transform the livestock sub-sector. Briefly, it the panel discussion focused on how we can convert challenges into opportunities. One of the panelists raised that basically, we have been saying for long period of time that Ethiopia has got huge livestock potential and still we are saying that productivity has remained low. We said this and we keep on saying it now. I do not know for how long we continue saying this. We failed to develop these huge resources for ensuring food security of the country. Moreover, we are not be able to extract the maximum benefits through export.

When we see higher educational institutions especially those that have got agriculture, they have been trying their best to do research to generate technologies, new knowledge to disseminate them. Haramaya University is one of the institutions that have actually pioneered agricultural research education and it has tried to do its best in terms of generating technologies and knowledge in the areas of crops and livestock. What we can say confidently is that we have done well in terms

of doing research in crops. We have generated technologies. However, the research for development in the areas of livestock and the benefits are unsatisfactory in a way that those research results; technologies and innovation probably generated have not been scaled out to serve the purpose.

The technologies we refer to are most of the time, in terms of crops. But when it comes to livestock we do not have much to be proud of, we have done something but we have not done it to the level expected. This is not specific to Haramaya University alone may be it is due to chronic problems it has caught in the national livestock research system. So one could say animal research has really remained behind in such a way that smallholder farmers could not benefit as much as they would benefit from crop research and extension. Indeed, livestock research and development has some inherent problems in terms of the time required to generate technologies and innovations. We are discussing about constraints since the start of the livestock research and development in this country for more than half a century. However, for how long are we going to talk about constraints and externalize our own weakness to the inherent natural of livestock research in Ethiopia? There is nothing in this world that goes without constraints. Hence, despite the challenging nature of livestock research and development, we could have still done more. But we are always complaining and haven't done our best to take the livestock research to the next level. One of the constraints could be lack or shortage of research fund allotted to agriculture. The paradox is that if a colossal amount of fund available, could we still generate technologies as much as we need. We are not a determined livestock professionals enduring to the expected bring changes.

The point is if good amount of research fund is available, the problem may be failure to use the fund, and hence, unless there is controlling and monitoring system put in place, it is likely that we get better results in research work.

Another constraint is shortage of critical mass of staff that can do innovative research in animal science. Usually qualified research staffs do not stay in one place because they look for better job opportunities instead of looking for better research opportunities and hence, they leave their institutions whenever they get the chance. In addition, there is a need to have appropriate curriculum for students training. Research at the universities is mandatory and universities must maintain its status quo with research. There should be research culture otherwise; it cannot be different from any education given at high school level. Moreover, facilities to undertake innovative research are other bottlenecks. There is no place, where livestock development comes without the use of modern technologies and state of the art. Yet, we have not developed a single center of excellence that deals with specific researches and development in this country. Without applying newly emerging science, technologies, and innovations, our livestock sub-sector will never be developed and we cannot be competent on the global livestock market.

Besides, the government plan puts targets at a higher level, which require very intense interventions. What does it take to transform? To transform it takes science and technology inputs and development based on science. It takes institutional and human capacity building and supportive policy interventions. Universities have stake in promoting interventions through research.

Universities have this triangular objective: Training, Research and extension. However, through time this triangular arrangement has been changed. Fortunately with few numbers of graduates, there had been a significant progress made both in research and extension work. But as time went on and higher rate of enrolments came about, the number of qualified staff decreased and this situation eventually caused the role of research and extension activities to be weakened.

The beginning of education needs to be emphasized. Education must start at early stage. There is a need to improve the aptitude of students' right from the very beginning. It is important that students' natural

ability to make progress in their inherent capacity be encouraged so that they perform well and become innovators. Students must have opportunity to practice after training on how to do things not just for some short time but also for a longer period so that they become proficient in whatever they are doing. In this regard, how many specialized training institutions do we have? Moreover, how many of the private sectors need these kinds of specialized work force?

When we come to pastoral and agro-pastoral communities, situations become even far worse because most of our university staff may not be well equipped with appreciable amount of knowledge of pastoral and agro-pastor communities. On the other hand, we need to respect the fact that pastoralists do have their own indigenous knowledge that made them survive in such a harsh and unpredictable environments. Pastoralists use their indigenous knowledge in many ways to solve problems of their own and even help others when they are entangled in pastoral issues.

One of the panelists injected a different dimension to the discussion. For over a decade now, the government of Ethiopia has been saying that the underlying policy of agricultural economy for this country is commercial transformation of smallholders. Now the question that comes up immediately as a researcher is “how can research support that transformation process”? In addition, what should the portfolio of research be in order to achieve more effectively to support the commercial transformation process in this case particularly of the livestock sector?

When we talk of commercial transformation of smallholders, we need to understand its meaning. It means transforming subsistence livestock sector into a market-oriented livestock sector. What type of livestock sector do we have now? For the most part, it is the cattle themselves. The smallholder farmers keep their animals as an insurance against odds, use them for sustained draft power, household consumption, use them as a store of wealth and sometimes they are reserved for sale in case of

unobserved household needs. Thus, there is a need to transform this sector into a market-oriented sub-sector, which is characterized by income generating activities from the livestock enterprise. This scenario produces some kind of market-oriented transformation, which thereafter gives out market signals that influence production decisions. The smallholder farmers get into transactions of some kind where they purchase goods and services.

Why do we worry about transformation? We worry about transformation because subsistence agriculture alone is not the only viable way to get out of poverty and to get out of food insecurity. This situation forces the farming communities to diversify their production system and to this effect, the importance of research has been stressed to play a major role to bring about the value chain approach in the livestock production system.

To streamline livestock production system, the existence of regulatory body is necessary. There are three research portfolios towards developing value chain. To achieve this, we need to research input, we need to establish in extension service system, we need to establish financial system, we need to research on livestock insurance, we need to research on post-harvest and processing issues, we need to research on marketing and distribution, and finally we need to research on broader policy and institutional environments.

1. Diagnostic research

This is to understand what happened in the value chain as a whole and what the constraints and what the opportunities are.

2. Action research

Tries to see how the generated activities develop an applied. Also examines constraints and the lessons learnt to scale up the value chain

3. Impact research

Tries to see how much the action research contributed to the intended objectives.

These are the kind of research portfolios required to support the intended transformation in the direction we want.

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## **Report of Panel Discussion III**

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**Moderator:** Dr. Solomon Desta

**Rapporteur:** Dr. Kassahun Awgichew

**Panellists:**

Prof. Adugna Tolera

Dr. Azage Tegegne

Dr. Belayneh Legesse (Absentee)

Ato Biruk Yemane

Ato Girma Kebede

**Topic : What Critical steps should be taken to further enhance the role of Livestock as an Economic Driver in Ethiopia in the coming 16 years?**

The moderator, Dr. Solomon Desta opened the panel discussion by introducing the panelists. He said four of the five panelists are present and Dr. Belayneh Legesse, VP for Admin and Finance, Haramaya University was unable to attend. The participating panelists are from the Academia, Research, Development and Private Sectors. The moderator requested the panelists to be time sensitive and share their views on the critical role livestock has been playing and could play in the future as economic driver to bring positive change in the National economy.

Ato Biruk Yamane was the eye breaker of the panel discussion. Before he started, he was asked to reflect on the role that the private sector could play in enhancing the economic development of the country as stipulated in the livestock and meat development program and in the GPT II by 2020

or the GTP III period 2028. He was also asked if the private sector is getting support from the government as stated in the GTP II. Ato Biruk first reflected that he started his carrier by doing research in he knows very well the trends, pros, cons and achievements in the livestock sub-sector since its inception. He then discussed that there has to be a paradigm shift from the government as well as from the research side in that they have to focus on attitudinal and structural changes to support the livestock sector. Moreover, he reflected on the fact that and research should focus on solving systematic bottlenecks and bigger issues rather than focusing on addressing specific problems that does not take us anywhere. However, the private sector still faces huge challenges in getting adequate and input supply and sustainable marketing infrastructure and networking. Ato Bruk windup his discussion by stating that the livestock sub-sector is obviously one of the next growth drivers in Ethiopia and immensely contributes to the GTP II program and beyond if such system gradually tackled at different levels.

The second speaker was Ato Girma Kebede. Ato Girma was asked if the establishment of the Ministry of Livestock and Fishery Development has any impact on the livestock development activity up to now. As Girma started his discussion by stating that the call for establishing an institution catering for livestock development and research is long overdue. Ato Girma discussed that it has now been realized and the challenge will be how this could bring about the desired changes in enhancing the development of the livestock sub-sector so that it could contribute to the development of the national economy. Ato Girma underlined that the government should focus on engaging the private sector and creating enabling environment instead of attempting to strengthen government-organized cooperatives, government enterprises, and institutions to bring about changes in the livestock sub-sector. The Ministry of Livestock and Fisheries (MoLF) need to clearly stipulate the roles that the private sector could play and the commitment of the government on how it to support the private sector, be it small scale, large scale and commercial producers livestock producers.

The third speaker was Prof Adugna Tolera, senior scientist in Animal feeds and nutrition from Hawassa University. The moderator provided an insight that critical shortage of animal feed in this country and in fact, the production and supply of feed is utterly mismatches with the huge animal population we have. Prof Adugna stated that there is a huge difference between the potential and actual feed production indicating that there is acute animal feed shortage and productivity gap in the country. Land is one of the critical limiting factor to produce adequate feed for our livestock. With the existing system, land has never been a priority for livestock production. Existing grazing lands are increasing under pressure and are being converted into crop fields leaving the livestock to graze on marginal and less productive lands, roadsides and sometimes restricted to a very small area without grazing fields. The low producing local animals, whatever moderate producing animals we may have are competing for the same feed resource we have. As the emphasis is to put most land under cultivation, small farms and even pastoralists are facing shortages of grazing area for their livestock. Prof. Adugna stated that we need to produce more feed, we need to use available feed resources more efficiently and we need to improve the quality of available feed. Modern technology should be practiced and appropriate land policy should be in place to produce more animal feed in a limited area. For the achievement of targets in GTP II and other livestock related development agendas, special attention should be given to making livestock feed available both in quality and quantity as well investment in the livestock feed development should be a priority agenda.

The next speaker was Dr. Azage Tegegne, livestock scientist and Deputy Director General Representative at the International Livestock Research Institute (ILRI). The moderator asked Dr. Azage to give a briefing on the fact that ILRI has been promoting livestock development and has been focusing on improving the productivity of smallholder livestock keepers. The need for higher productivity is a top priority to meet the national need for animal resource food. Dr. Azage was requested to reflect his view on this topic. Dr. Azage stated that the private sector has definitely has a

role to play when it comes high input and commercial oriented livestock production. However to increase production and productivity at all levels we need to transform our research and extension system and the capacity of our higher learning institutions. Dr. Azage explained that, currently Ethiopia is attracting investment opportunities and becoming one of the investment destinations for commercial dairy production in the region. Most investors are interested to come up with their own genetic materials to start with and have the intention to support that with current state of the art like embryo transfer and semen sexing. This has multitudes of benefits to the country's traditional livestock producers. The French company was mentioned to have such growing interest in Ethiopia with the intention to come with as many as 20000 dairy cows. Thus, while we need to focus on smallholder dairy producers, we have to focus on engaging modern commercial dairy producers that use modern technological tools and state of the art to ensure production of quality products on one hand and meet consumer demands on the other hand.

Ato Biruk complemented Dr. Azages' view by stating that taking the current market situation at both local and export markets, lack of appropriate genetic material for large-scale production, importation of cheap dairy and poultry products in to the country are some of the bottlenecks to livestock development in Ethiopia. On the other hand, it is evident that the future is with the private sector and therefore, attractive and appropriate policies and technical supports and arrangements are required to help take of the private livestock investors/producers.

Eventually, conference participants were requested if they have any issues related to the theme of the panel discussion. From the conference participants, Ambassador Dr. Teketel Forcido articulated a new view that the term "private sector or investors" is sometimes misinterpreted or misused. Ambassador Dr. Teketel earnestly stated that, under the Ethiopian context, smallholders themselves are also private sectors/investors depending up on their scale of production. Thus, while the well to do private sectors who are better off are favored in terms of

policies and regulations, our system doesn't support smallholder livestock producers.

Ato Sora Adi was the next speaker who disagreed with the view given by Ambassador Dr. Teketel. Ato Sora explained that the panelists said very little about the Livestock Master Plan (LMP), which the government launched recently and considered to be the road map for any livestock development activity envisaged in this country focusing on smallholder and medium scale livestock producers and pastoralists. Ato Sora was reserved that the Livestock Master Plan should not be considered as a blue print and ultimate document that cannot be modified. There should be options whereby the LMP can be amended and improved depending up on the stage of development and need of the day. He also worried whether the targets in the LMP can be achieved within the given time horizon.

The third speaker from the conference participants was Dr. Birhanu Gebremedhin. Dr. Birhanu provided evidence based discussion where he stated that more than 50% of the food produced at global level comes from smallholder producers and this trend is expected to continue for the years to come. The issue now is how to transform this system to make it more efficient. Dr. Birhanu added that nothing was discussed about the weak livestock extension system in Ethiopia. Moreover, one of the many factors that negatively affected the entire livestock production in past many years in this country that it has been neglected over a millennia by policy makers. However, the establishment of the livestock sub-sector at ministry level need to give priority to the livestock extension and value chain approach to tackle long standing and systematic bottlenecks at various level.

Dr. Azage was in full agreement with views and comments of Dr. Birhanu's that for a livestock sub-sector to be impactful and serve the purpose, livestock extension services need to be strengthen and should be given due emphasis. Dr. Azage recalled best experiences of livestock extension services in those early days, particularly with the establishment of former Alemaya University of Agriculture and agricultural colleges

senior graduating class animal science students serve as extension agents to livestock producers. They are assigned to work in the Ministry of Agriculture, Agricultural Research systems and livestock development institution where they are equipped with sufficient practical experiences and skills. Dr. Azage criticized that with the current booming universities and colleges across Ethiopia, such services and student capacity building is not practiced. That very rigorous processes are currently loose or inexistent in the present day university studies, added Dr. Azage Tegegne. He added that those early education curriculum need to be reinstated in the present education system.

Eventually, the moderator of the panel discussion, Dr. Solomon thanked the discussants and closed the panel discussion stating that the comments, suggestion, and view of the panel discussion will be communicated to ESAP for documentation and publicity.

## ESAP's Publications

1. Development Opportunities in Livestock Agriculture 1993
2. Women and Animal Production 1998
3. Livestock Production and the Environment: Implications for Sustainable Livelihoods 1999
4. Agro-pastoralism: which Way Forward? 2000
5. Livestock in Food Security-Roles and Contributions 2001
6. Challenges and Opportunities of Livestock Marketing in Ethiopia 2003
7. Farm Animal Biodiversity in Ethiopia: Status and Prospects 2003
8. Participatory Innovation and Research: Lessons for Livestock Development 2004
9. The Role of Agricultural Universities/Colleges in Transforming Animal Agriculture in Education, Research and Development in Ethiopia: Challenges and Opportunities 2005
10. Institutional Arrangements and Challenges in Market-oriented Livestock Agriculture in Ethiopia 2006
11. Pastoral Livestock system: Opportunities and Challenges as a Livelihood Strategy 2007
12. Commercialization of livestock Agriculture in Ethiopia: Challenges and Opportunities 2008
13. Climate Change, Livestock and People: Challenges, Opportunities and the Way Forward 2009
14. Commercialization of Livestock Agriculture in Africa: Challenges and Opportunities 2010
15. Indigenous Peoples and Animal Agriculture in Ethiopia: Exploiting the Potential and Reducing the Limitations 2011
16. Livestock at the Crossroads of Climate Change and Variability 2012
17. Livestock and Economic Growth: Value Chains as Pathways for Development 2013
18. The Private Sector in the Ethiopian Livestock Industry: Investment Opportunities and Challenges 2014
19. Water and Livestock Development in Ethiopia 2015
20. The private Sector in the Ethiopian Livestock Industry: Investment Opportunities and Challenges 2016

### Other publications

1. Zoonotic Diseases in Ethiopia 1995
2. Forage Production in Ethiopia, a Case Study with Implications for Livestock Production 2002
3. Artificial insemination techniques (Amharic) 2010
4. Modern cattle fattening practical module (Amharic) 2010
5. Range Management and Feed Production Practices (Amharic) 2010
6. Achieving Development Impact among Pastoral and Agro-Pastoral People: Lessons Learned in Southern Ethiopia, 200-2009. 2012
7. Proceedings of the Workshop on the Establishment of the Pasture and Rangeland Forum Ethiopia (PaRFE) 2013