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Supporting Evidence-based Interventions

LIVESTOCK DATA FOR DECISIONS

BILL & MELINDA GATES foundation

Report on the Dairy Sector Data Needs Workshop and Focus Group Discussions, held on August 8th and 9th, International Livestock Research Institute (ILRI), Addis Ababa campus

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1. Introduction

With a population of over 110 million people, there is a huge potential market opportunity in Ethiopia for milk and milk products. However, both milk production and consumption are very low. This is driven by a number of factors. In rural areas the animals used by smallholder farmers are local breeds which are not selected for milk production. Animals are managed in a traditional way, depending on natural pasture and crop bi-products with no supplementary feeds; the quantity of milk produced is low. Milk in the rural setting is mainly used for household consumption and is not widely marketed; any surplus is usually converted into butter and sold in local markets.

The situation is different in the urban and peri-urban areas where farmers use crossbred and exotic dairy animals. They have access to artificial insemination, use more intensive systems, commercial sources of feeds and have access to animal health services. But these farmers account for only 1% of the dairy cattle population in the country. They supply milk to consumers in major urban centres, both though the collection and distribution system of dairy processors which delivers processed products to consumers, and the raw milk marketing system in which either consumers buy directly from producers or the raw milk traders do the collection and distribution of raw milk mainly through informal markets. The country produces about 4 billion litres of milk per year. Per capita consumption is very low, estimated at about 20 litres, though rising consumption levels in Addis Ababa have reportedly brought it to about 40 litres.

There are a number of challenges facing further development of Ethiopia's dairy sector. The first is that local breeds provide about 1.5 litres per cow per day. These cattle also have a short lactation length of about 150 days. Although there is a National Artificial Insemination Centre, smallholder farmers have limited access to improved dairy genetics and the artificial insemination delivery system is also weak and inadequate. Improved dairy animals are very few, estimated at about one million in number, and often too expensive for smallholders to buy. The artificial insemination service delivery system is also weak and inadequate. There is also a critical shortage of feeds and water. Livestock mostly feed on grass hay and crop-residues, most of which is poor quality. Supplementary feeds, such as cereal bran and oil cakes, are either too expensive or in short supply. Dairy production also needs good quality water, and the availability and reliability of supply is a major constraint.

Through the support of the Bill and Melinda Gates Foundation, and the programme activities of Supporting Evidence-Based Interventions (SEBI) at the University of Edinburgh, a short term project is underway in collaboration with the Ministry of Agriculture and Livestock, and the Agricultural Transformations Agency (ATA). The focus is to identify the data needs of different stakeholders in the Ethiopian dairy sector, and to characterize them by data type, use and relevance to other stakeholders. This is seen as a fundamental priority for the sector as it seeks to respond to the rapidly growing demand for dairy products in Ethiopia, and to foster the role of evidence in policy and strategy development.

An initial stakeholder mapping process was conducted in May 2018 in Addis Ababa and its surrounding, with a follow up in Hawassa in SNNPR and Makelle in Tigre. From this process, a draft tabulation of data needs of different actors in the dairy value chain were identified. The workshop and focus group discussions held in Addis Ababa on 8th and 9th of August, 2018 build on the past stakeholder mapping and scoping process to identify and characterise both current and future data needs by types, their availability, formats, level of detail, methods of dissemination, uptake and use,

and institutional arrangement including the different roles of public and private sectors in decision making processes.

2. Structure of the workshop

2.1 Stakeholder groupings

The workshop focussed on the data needs of all major actors in the dairy value chain in Ethiopia. This was achieved by categorising the different stakeholders into five groups, and seeking their opinions of date needs. The groups were:

- Policy and regulatory systems
- Inputs and services providers
- Milk and milk products producers
- Dairy product processors and marketers
- Dairy research and extension

2.2 Data need categories and uses

After forming the working groups, each was asked to identify the different data needs and consolidate them under the following set of headings. It was also emphasised that the list of headings were not exhaustive, but were given to provide a framework for discussions.

- What are they?
- Why do you need the data (the purpose)
- In what format do you need
- Qualitative or quantitative or both
- What quality is necessary
- What resolution (geography, scale, level, etc) is required
- Where are the major data gaps?
- What time scale is required for the data?

2.3 Data use and application

- How will you use the data?
- Who else will use the data?
- Will there be a cost to the data?
- How will it be stored?
- Where will it be stored?
- How will the data be accessed?

2.4 Data collection, quality control and management

- How is/will the data be collected?
- How will the data be managed?
- How important is quality, and how will that be managed?
- How importance is ease of use, and how is/will this be managed
- How will data be disseminated?
- And to whom?
- Access to data: by whom?
- Are there intellectual property issues?

2.5 Institutional issues regarding data use, availability and access

- Who will be responsible for responding to these data needs?

- Is there adequate capacity to meet these needs, uses and access requirements?
- What should be the milestones for follow up and actions following this workshop?
- What are the technology needs to ensure these data needs can be met?
- What are the communications needs required to ensure appropriate data access?
- What are the accountability needs?

2.6 Workshop programme

The two day workshop was opened by Senior Programme Officer at the Bill and Melinda Gates Foundation in Ethiopia.

9.10 am:	Introductions:
9.20 am:	Workshop structure and expected outputs:
9.30 am:	Overview of the Ethiopian dairy sector:
10.00 am:	Who are the actors in the dairy sector, what are the data needs of different stakeholders, and what are the drivers behind these? A demand-led chain to strengthen policy, strategy and performance? Facilitator
10.30 am:	Case study examples of stakeholder data needs for performance enhancement: • Processors • Producers • Policy developers and regulators • Data service providers and repository
11.00 am	Tea/coffee
11.30 am:	Gaining consensus on workshop outputs. Facilitator
12.00 noon:	General discussion and group formation
1.00 pm:	Lunch
2.30 – 5.00 pm:	Stakeholder sub-group discussion and output generation

Thursday 9th August

9.00 am:	Review and recap of day one discussions. Facilitator
9.30 am:	Continued stakeholder sub-group discussion, and output generation
10.30 am:	Tea/coffee
11.00 am – 1.00 pm:	Presentation of stakeholder group outputs. Each group 15 minutes for presentation, with 5 minutes for clarification questions
1.00 pm:	Lunch
2.30 pm:	Synthesis of data need outputs, and consensus on priorities for the Ethiopia dairy sector development
3.30 pm:	The way forward: Action points and responsibility, capacity for follow up, communication and technical requirements, and accountability

4.30 pm: Summary and closure

3. Synthesis of dairy sector data needs

Based on the outputs of the five discussion groups, synthesis of the data needs by the different stakeholder clusters, categorised under the headings of herd, production and reproduction and inputs, is presented below.

3.1 Dairy herd data

- Population numbers and category of dairy animals
- Dairy herd structure by species (including cattle, goats, camels), age group, blood type, location, livestock production system and agro-ecology
- Pedigree information

3.2 Production and reproduction

- The major dairy farmers, their location, herd size, daily milk production
- Milk production data at national, regional, zonal, woreda, household and individual animal level by breed of animals and production system
- Milk yield by breed and production system
- Milk composition by breed, stage of lactation and production system
- Lactation length
- Calving interval
- Service per conception
- Household milk utilization by location and production system:
    - Milk consumption at home by producers
    - Milk processed at home
    - Milk marketed:
        - Milk sold to the processors
        - Milk sold to the raw milk distributors

3.3 Dairy input data needs

The major inputs for dairy production and processing identified by the different stakeholders groups are feed, veterinary services and drugs, genetics (including AI, bull service, embryo transfer), equipment and machinery, and spare parts for different dairy related machineries. These are itemized below:

3.3.1 Feeds

- Major dairy feed producers by location and types of feed produced (species and types of forages, types of industrial byproducts, feed blocks, mixed ration etc.)
- Type of feeds produced by the different feed producers
- Volume of feed produced by the different actors (showing seasonality)
- Biomass yield of the different forage species
- Quality – Standard that different feed producers and distributors need to comply with
- Feed storage conditions
- Quality, availability, and prices of the different feed/forage types (including trends)
- Costs of transportation from points of feed production to the center/points of use
- Demand for feed by the different dairy producers

- Major distribution channels for the different feed producers, volume of feed distributed through each channel by geographic location and season
- Availability and accessibility of the required quality and quantity of feed (by seasons and location)
- Economic minimum and optimum sizes of operation for production and supply of different feed products
- Resources (finance, land, labor) needed for economic minimum and optimum size of different feeds production and their availability by location
- Access to resources such as land, finance and labor for forage production, feed grain production, feed processing and similar activities in the different regions
- Taxes levied on the different feed ingredients and mixed ration by region
- Incentives to promote feed production and processing

3.3.2 Animal health services and veterinary drugs

The veterinary services include the provision of preventive medicine programmes, vaccines, diagnosis and treatment of disease, while inputs include veterinary drugs, equipment and supplies for veterinary clinic and laboratories. The data needs on animal health services and veterinary drugs include the following:

- History on the prevalence of different diseases and parasites by location, season and frequency of occurrence
- History on mortality/morbidity of animals by location and causes
- Major disease diagnostic laboratories and service centers by location
- The details of private and public vet service providers (by level of operation and location)
- Costs of the private and public health services
- The details of veterinary drugs, veterinary equipment (for clinics and laboratories) and manufacturing plants, importers, wholesalers, retailers (drug shops) by location and volume of operation.
- Prices of vet services, drugs, equipment and consumables by supplier and location
- Incentives for veterinary service providers; vet drug, equipment and consumables manufacturers; importers; wholesalers and retailers
- Taxes on vet service providers and vet drug shops

3.3.3 Genetic improvement services and inputs

The inputs under this category are semen, liquid nitrogen, AI equipment and disposables. Genetic improvement services include AI and embryo transfer services and herd management/milk recording. Data needs on the inputs and services of dairy genetic improvement include the following:

- Details of public and private AI and bull service providers by location (lists)
- Data on providers of AI services with sexed semen (their details including location, geographical coverage/capacity)
- Quality of AI services including services per conception
- Data on the semen used for AI including: Pedigree information of the semen, blood level of the semen, holders of semen with different specifications
- Sources of liquid nitrogen by location, production capacity, prices and their areas of operation
- Capacity of the available AI service and the cost of their services

- Details of suppliers of AI equipment and disposables (manufacturers, importers, wholesalers, retailers)
- Incentive packages to promote best AI services
- Taxes and other obligations

3.3.4 Dairy technology

The items considered as dairy technology are machineries, spare parts, equipment and consumable supplies used in milk production, processing, and marketing. Data needed for actors involved in these activities include the following:

- Details on importers, and distributors of dairy machinery (milking machines, milk processing machines, dairy laboratory machines etc.), equipment, spare parts and consumable items by location, their volume of operation, product availability, prices etc.
- Types of dairy machinery, equipment, spare parts and consumable items, their current prices, availability and sources
- Details of companies and individual experts providing technical supports including installation and maintenance services, training and technical advises on dairy machinery and equipment.

3.3.5 Policy decisions and directives in the dairy sector

- Number of different actors, volume of operation and their geographic location
- Input need, availability and costs for different dairy actors by location
- Economic minimum and optimum levels of feed/forage production, processing and distribution; fabrication or import, wholesale and retail of veterinary drugs; provision of animal health and AI services; milk production, processing and distribution by geographic location
- Availability of finance, land, labor and technology for dairy input producers, processors and suppliers; milk producers, processors and distributors
- Land use plans of areas identified for dairy development and comparative advantages of the different land use options
- Types and volume of imported dairy products, their sources, costs and wholesale and retail prices
- Major importers of dairy products
- Drivers of importing dairy products (quality issue, consumer preference, competitiveness)
- Quality standards and data on important parameters with respect to consumers safety (zoonotic diseases), hygienic and product handling requirements
- Taxes on the products and services of different actors
- Incentive packages for different actors in the dairy sector and gaps in these incentive packages for dairy investment

3.3.6 Dairy marketing

Data needs for marketing of milk and milk products is related to data needs along the value chain on the demand and supply of milk products, costs of production, prices, consumer types and preferences. The following are some of the important data needed for dairy marketing sub-sector:

- Major milk producers and suppliers to processors and consumers (raw milk), their supply volume by location, production system and season
- Major milk processing plants, their production capacity, product types and volume
- Prices for milk and milk products by location

- Quantity of raw milk produced and supplied to the different market channels by different actors (by geographic location) over years showing seasonal dimensions
- Consumer types and size for different milk and milk products over seasons and locations
- Demand volume for milk and different milk products by consumer type, season and location
- Consumer preference for different products , consumption size, and product quality considerations
- Imported milk and milk products, their source, quality, volume, source, consumer types, market share and prices
- Major marketing channels for different milk and milk products and product flow in each channel
- Product quality standards and consumer safety considerations

4. Data use and application

All stakeholder groups indicated that the use of data is to make evidence based decision. More specifically, data will be used for production planning, marketing and investment decisions, policy formulation, system harmonization, allocation of resources to their best use and improve the production and productivity in the dairy sector. It is also used for proper monitoring and evaluation by the regulatory system. Entrepreneurs (dairy input suppliers, service providers, producers, processors, distributors) need the data for planning and timely decision making in order to make their enterprise profitable. In addition, researchers, investors, government and non-government development actors, academicians, planners, policy makers and the regulatory system need disaggregated data in the dairy sector to accomplish their task. All stakeholder groups indicated they need both quantitative and qualitative data. The stakeholder groups indicated different methods of data collection which fall under the standard data collection and management methodologies to collect demand driven and user friendly data for use by different stakeholders in the dairy sector. Means of communication include websites, text messages using mobile phones, printed and electronic mass media, monthly bulletins and annual reports could be used to access the data. Data collection, management and dissemination incurs huge costs; access to data by different stakeholders could be dependent on subscription, membership or direct payment.

5. Data collection, quality control and management

As indicated above, data collection, quality control and management need to follow standard procedures. The frequency of data collection depends on the types of data since some of the data types need regular collection and updating depending on the required level of resolution (individual animal, district, zonal, regional and national levels). Some data (e.g. milk production by individual animals) need daily recording, others like vital statistics need recording on the occurrence of events such as births and deaths. The bottom line is data needs periodic updating depending on its nature and purpose. Different stakeholder groups suggested different entities to be responsible for collection and management of dairy related data. Mistry of Agriculture and Livestock Resources Development, Central Statistical Agency, National Animal Genetic Resources Improvement Institute, National Dairy Board, Universities and independent institution to be set up for this purpose are some of the suggested entities. With regard to the intellectual property right, it will be decided by the entity which will be assigned to take a leading role in collection and managing the data set. However, it should adhere to the data laws of the country and general principles of seeking permission of owners/generators of the data to acknowledging data sources in any form of use. The stakeholders indicated huge data gaps in the dairy sector in terms of sufficiency and consistency in that data in the dairy sector is not well disaggregated with breed and breed types; there is no clear productivity data; and issues related to animal health and disease are not well captured. It was

generally emphasized that questions regarding who should own and manage the data, linkage and communication among the different data generating institutions, the coherence and complementarity among data generated by these institutions and accessibility of data are the major bottlenecks that need due consideration.

6. Institutional arrangements regarding Ethiopian dairy sector data

The discussion on the institutional arrangement for generating, ownership and sustainable management of the dairy sector data is not clear and still a challenge in this regard. So far, there is not any viable institutional arrangement to address the data needs in the dairy sector. This is partly due to poor communication and linkage among different institutions; lack of coherence and complementarity in the data generated by different entities and its repercussion on the development of the dairy sector. Accordingly, the different stakeholder groups have discussed and given indications as who should be the responsible body to address the data needs of the different actors in the dairy sector. The policy and regulatory stakeholders group suggested CSA and MoALR as appropriate bodies for developing and handling dairy sector data base, while dairy inputs and services stakeholders group suggested CSA with a strong technical support from MoALR. On the other hand, the research and extension stakeholders group suggested MoALR with its regional bureaus as a sole responsible body, while the dairy producers and processors stakeholder group suggested the establishment of new, independent association (e.g. National Dairy Board) and government institutions to develop and handle dairy sector database. The discussion on this issue was further taken to the general discussion.

Regarding the existing limitations in capacity (human, technological, institutional) and in meeting the data needs of dairy stakeholders, participants suggested that an inventory of the existing human, technological and institutional capacities be carried out in order to understand and quantify the capacity requirements. Since there were different initiatives to develop livestock information system with limited or no success in sustainably managing and running the system, there are unused facilities within different institutions. Proper inventory of these facilities (technologies) and their existing capacities to be used for the intended dairy sector data base will help to propose different capacity building interventions to fill the existing gaps. Some participants from the MoALR indicated the intention within the ministry to establish their own livestock database, and develop a national dairy sector policy; they considered this workshop and the whole initiative to work on dairy sector data needs as complementary to their work. These participants indicated the deficiency of the Ministry with respect to data in the dairy and other livestock commodities, and praised this effort as timely and legitimate response to the lack of appropriate and reliable data for planning, policy formulation and decision, investment and development activities in the dairy sector.

7. Discussion

The focus of the general discussion was on the institutional arrangements for development and sustainable management of dairy sector database. Participants from different stakeholder groups actively discussed this issue and suggested a number of alternative institutions to take a leading role in hosting (development and management of database for the dairy sector). Some suggested National Animal Genetic Resources Improvement Institute (NAGII) to take this responsibility. The suggestion of NAGII was considering its experience and current responsibility in managing database for livestock genetic resources. However, it was indicated that NAGII's focus is mainly on livestock genetic improvement and it may overlook issues that are out of its specific mandates, including input; service; production; feeds and feeding; animal health; dairy production, processing, marketing, and consumption. Considering this, some participants suggested the sector for livestock development under the Ministry of Agriculture and Livestock Resources to host the dairy sector

database. The challenge with this institution could be lack of capacity (human, financial and technological capacities) to develop and manage the intended dataset. Despite this, there are intentions to establish a unit to handle the dairy database under the sector for livestock resources.

A National Dairy Board was the other suggested body to own and manage the dairy sector database. It is important to recognize that there have been efforts (for over a decade) to establish the national dairy board, but its creation still remains elusive. This is partly because of lack of data for the concerned policy makers to make evidence based decision to give permission for the establishment of the Dairy Board. In this regard, one of the participants observed that some officials question the purpose of establishing the dairy board in a country where there is no milk. This illustrates two important points. The first is a lack of reliable data on the performance of the dairy sector and the need to address the data needs of the sector in order to have the right institutions in place. The second point is that the dairy sector is not developed to the expected level due to a variety of factors. Some of the missing preconditions for the development of the dairy sector are strong associations (mainly producer's cooperatives) that support development in the sector, and challenges in getting access to land. According to participants, the existing dairy farmers' cooperatives are not effectively supporting the activity of their members. These cooperatives are politically motivated institutions that are established and run with strong interference of government actors and could not address the challenges in the sector. Access to land to establish dairy farms is the other challenge. The government cannot evict smallholder farmers residing in locations suitable for dairy farming, and it is extremely hard to obtain unoccupied land for this purpose. This means it is very difficult for the government to make available enough land for dairy sector investment in agro-ecologically suitable and economically feasible locations. The only option (if available at all) is to enter into a shareholder agreement with smallholder farmers to convert their land into dairy farm or out grower scheme for forage production and related activities. These challenges are limiting development in the dairy sector and contributing to the bottlenecks for the realization of the National Dairy Board. However, the establishment of such a Board could serve as a catalyst to explore some of these major challenges and propose viable solutions.

In general, four alternative institutions were suggested to host (generate, manage, coordinate and communicate) the dairy database in Ethiopia:

- National Animal Genetic Resources Improvement Institute
- Sector for livestock development under the Ministry of Agriculture and Livestock Resources
- A newly established National Dairy Board
- Central Statistical Agency

The workshop was closed by a representative of the BMGF. The representative appreciated the commitment of participants and their openness to express the severity of the problem and the level of concerns on issues related to the dairy sector data availability, reliability and coordination of efforts. She indicated that livestock issues are very broad, among which the dairy is the focus of this workshop. Several institutions can collect data for different purposes but there should be an entity to coordinate efforts and provide up-to-date, reliable and consistent data to the different users. She emphasized that products of this workshop will contribute immensely to modernize Ethiopia's dairy sector database and her organization is committed to support efforts to realize the intended outcome.

8. Next steps

- Circulation of the workshop report to workshop participants for comment

- Presentation of the report and feedback received to the Ministry of Agriculture and Livestock Resources.
- Consultation workshop/meeting with the MoALR on the findings of the Ethiopia Dairy Sector Data Needs pilot study
- Proposal development for funding and implementation of the envisaged dairy sector database, based on the outcomes of the consultation meeting.

ANNEX: Outputs of group discussions, question and comments after group presentations

1. Dairy inputs and services provider stakeholders group

Questions and comments after the group presentation

Comment 1: You focused on the data needs at the national level than the individual decision makers at household level.

Comment 2: There is a need to show the issues related to area coverage, volume of products, and capacity of different input suppliers

Res. Comments accepted

Question 1: How do you suggest covering the costs for sustainable data collection and management? Who will cover the costs? Should access to data be on payment basis?

Res. It is obvious that data collection involves huge cost. Payments to get access to data will be contributions to support the sustainable collection of good quality data. Payment could be in the form of subscription, membership, telephone charge or direct payment. However, these charges upon access to data may not cover all costs of data collection and management. Government and development partners may need to invest on data collection and management because of the public nature of data and its contribution to development.

2. Policy and regulatory stakeholders group

Questions and comments after the group presentation

Comment 1: You indicated that identification of data needs for the dairy sector actors demands in-depth consultation with relevant stakeholders at different levels and what you did is not exhaustive. However, consultation was made with different stakeholders prior to the workshop in the form of scoping work. This workshop is the follow up of a three weeks scoping wok (assessment of the dairy sector data needs) to brainstorm the major stakeholders in the dairy sector. Moreover, the policy and regulatory group is mainly concerned with data needs for informed policy decisions and regulatory work in the dairy sector while other stakeholder groups discussed on issues relevant to their area of interest. The important this is to start with something and build up on it since it is very difficult to come up with exhaustive and complete list.

Comment 2: The need for establishing national dairy board and school feeding programs in order to support developments in the dairy sector is not covered in the presentations of the group output.

3. Research and development stakeholders group

Questions and comments after the group presentation

Question 1: Did you consider universities as important stakeholders in dairy data collection and management? Yes

Question 2: It seems that the role of Central Statistical Agency is undermined in your presentation of institutional arrangement. Do you think that CSA cannot handle the collection and management of data for the dairy sector?

Res. CSA is concerned with the macro level issues and does not go into detailed data at individual animal and household levels. This is because it has a capacity gap to undertake such issues. As a

result, it may need to consider creating a special department for livestock data in general and specific section for dairy data collection and management. This in turn needs building the human and institutional capacity of CSA in order to enable to accomplish the required tasks.

4. Dairy producers and processors stakeholders groups

Questions and comments after the group presentation

Question 1: On the points you mentioned in relation to institutional arrangement for collection and management of dairy sector data, do you mean that there is a need to establish new organization/entity or strengthening the existing ones? Which one has better comparative advantage?

Response: The group thought of establishing a new independent body responsible for development and sustainable management of dairy sector database. However it is essential to take inventory of the capacity of the existing institutions such as NAGII, MoALR, and CSA and consider building their capacity to enable them serving the intended purpose. This issue was widely discussed and it remained a topic for general discussion.