REPORT OF AN INTERNATIONAL MEETING ORGANISED BY THE RANGELAND MANAGEMENT PLATFORM, PASTORAL LIVESTOCK DEVELOPMENT DIRECTORATE, STATE MINISTRY OF LIVESTOCK DEVELOPMENT SECTOR, MINISTRY OF AGRICULTURE

IMPORTANCE OF LIVESTOCK ROUTES FOR LOCAL, NATIONAL AND REGIONAL DEVELOPMENT: THEIR MAPPING, SERVICING & PROTECTION

8th September 2015

Hiruy Hall, Ethiopian Institute of Agriculture Research (EIAR), Addis Ababa

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The following are the key conclusions and recommendations resulting from the meeting:

1. Livestock routes are a critical component of livestock production systems, and specifically in facilitating movement of livestock and people. Livestock routes are increasingly being blocked, and are poorly serviced and protected. This is having a negative impact on livestock, people and the environment.

2. There is a need to map livestock routes in Ethiopia in order to understand their location and status, how herds are managed and why, and as a first step in supporting, servicing and protecting them. This can be achieved at different levels – national, regional and local through different mechanisms involving different stakeholders. It is recommended that first a mapping of major livestock routes should be made at national level: this will then guide mapping at lower levels. The experiences of mapping that has already commenced in Ethiopia, as well as the experiences of neighbouring countries, can offer direction in this regard.

3. There is a need to service livestock routes in order to improve livestock production ensuring, for example, that livestock reach markets in a good and healthy condition. This could involve the involvement of the private sector in providing services along the routes – guidelines and standards for these will need to be developed. The experiences of neighbouring countries offer guidance in this regard.

4. There is a need to better protect livestock routes in order to sustain livestock production and contribute to its growth in a context of increasing pressures on land. This should be achieved with the consultation of pastoralists, crop farmers and other land users, and necessary trade-offs of formalising livestock routes and movement understood and agreed upon. Policy and legislation protecting livestock routes requires development. The experiences of neighbouring countries offer guidance in this regard.

5. Cross-border movement of livestock should be facilitated with appropriate controls and support systems in place. The IGAD Centre for Pastoral Areas and Livestock Development can provide support and guidance for this.

5. A central knowledge management system is required to house information and maps on livestock routes and their status. The information can then be used within land use planning and other development planning processes.

6. The Pastoral Directorate should lead on and coordinate the implementation of these recommendations working with other sectors and stakeholders. A working group should be established to support the Pastoral Livestock Development Directorate in this process.

BACKGROUND TO THE MEETING

On Tuesday 8th September a meeting was held on the "Importance of Livestock Routes for Local, National and International Development: Their Mapping Servicing and Protection." The meeting was organised through the Rangeland Management Platform – a forum organised by the Pastoral Livestock Development Directorate, State Ministry of Livestock Development Sector (MoA) and the Ethiopian Society of Agricultural Production/Pasture Rangelands Forum Ethiopia.

The objectives of the meeting were:

- To share experiences of mapping, servicing and protecting livestock routes in Ethiopia and neighbouring countries; and
- To identify opportunities for better understanding, servicing and protecting livestock routes in future, and suggestions as to how this could be achieved in Ethiopia.

The meeting was financially supported by USAID-funded PRIME, ILRI, International Land Coalition Global Rangelands Initiative, and Tufts University. The agenda for the meeting is provided in Appendix 1.

OPENING REMARKS

The meeting commenced with opening remarks from His Excellency State Minister Livestock Development Sector, Ministry of Agriculture, Gebrezhiabher Gebreyohannes

Dear Invited Guests, Participants and Ladies and Gentlemen
Good Morning,
Livestock supports the livelihoods of about 80 percent of rural people and perform multiple functions in the rural household economy. The livestock sub-sector is a major contributor to the overall economy contributing 19 percent of GDP, and 16-19 percent of the foreign exchange earnings of the country. It contributes 35 percent of agricultural GDP (or 45 percent if indirect contributions are taken into account).

In Ethiopia, livestock sector development is considered a priority by the government for stimulating overall economic growth, as a source of foreign currency, as source of raw material for industries, achieving food and nutrition security at household and national level. In recent years Ethiopia has displayed remarkable economic growth and substantial decreases in poverty. The country has witnessed double-digit economic growth, in most of the years between 2007 and 2015 the economy grew on average by 10.9 percent, which is well above the planned target of growth mainly from agriculture.

In the pastoral areas, livestock are the sole bases of the livelihood of pastoralists. The pastoral areas are the main sources of animals for the domestic and export market. In order to improve the livelihood of the pastoralists and contributions to the national economy, the Ethiopian Government has designed and implemented strategies that anchor on water development for livestock, human, feed production, rangeland development, improving animal health service coverage and quality, voluntary commune program, developing market infrastructure, development of animal and human health facilities, road infrastructure, schools, etc. The Ethiopian Government has also initiated different resilience programs supported by African Development Bank, World Bank, Italian Development Cooperation, and KfW to complement the ongoing efforts in the Afar, Ethiopian Somali, Oromia and SNNP regional states.

Invited Guests, Ladies and Gentlemen,
Due to the fact that pastoralists move from place to place within the country and from country to country in search of feed and water, some of the initiatives deal with cross border issues and involve a cluster approach with neighboring countries. Thus, knowledge of the llivestock routes are vital for livestock trade, accessing water and feed, for transport of goods and services, and for moving livestock away from crises such as drought or floods.

There are different types and levels of livestock routes. There are those that facilitate trade from one part of the country to another, often extending across borders. These routes can be considered as primary routes moving thousands of livestock every day. There are then secondary routes that result in well-trodden connections between one region and another, between highland and lowland areas, or between far-distanced dry and wet season grazing areas. Often livestock corridors are also wildlife corridors too, giving safe passage for wildlife moving from one conservation reserve to another. However livestock routes can be blocked by invasive species such as Prosopis juliflora or by new fields, and grazing enclosures. This blocking can negatively impact the effectiveness of livestock production systems.

To facilitate and understand livestock routes and then incorporate it into land use planning decisions at national and local levels, this workshop will facilitate sharing of experience from neighbouring countries as well as some initiatives in Ethiopia, that have sought to use different tools to map and understand where livestock routes are, what is their status and why are they used. I am pleased to say that increasingly here in Ethiopia livestock routes are being taken into account in land use planning and infrastructure developments – for example in the re-building of the Addis-Djibouti

railway and the new expressway to Adama, tunnels have been built under them to allow free and safe movement of livestock.

I look forward to hearing about the experiences of Tanzania, Sudan and Kenya in this regard. I welcome our colleagues from Tanzania Ministry of Livestock and Fisheries Development Tanzania; the Ministry of Livestock, Fisheries and Rangelands Sudan; Gedarif University Sudan; and ILRI to Ethiopia, and thank them for sharing their experiences and contributing to this meeting.

Local communities can also play a role in protecting livestock routes through developing local bylaws restricting encroachment and ensuring management of them. In response to cross-border movements IGAD's Transhumance Protocol offers guidance for facilitating such movement and I would like to welcome and thank Dr Babiker from ICPALD (IGAD Centre for Pastoral Areas and Livestock Development) for sharing IGAD's Transhumance Protocol with us and informing us of their plans for implementation.

I would also like to welcome our colleagues from Ethiopia – from Tufts University, from EIAR, from CARE Ethiopia, from ILRI and from Afar Pastoral and AgroPastoral Research Institute who will share their research, thoughts and experiences on livestock routes and related issues.

This meeting is being held through the Rangeland Management Platform, which is a joint initiative of the MoA, Livestock Development Sector and ESAP/PaRFE as a forum bringing together practitioners, researchers, donors and government representatives to discuss on critical rangeland management issues. Launched last year, I would like to thank ESAP/PaRFE and USAID-PRIME for supporting this important initiative, which has played a key role in raising awareness on important issues and contributed to government strategies and priority-setting in regards to rangeland management.

I very much look forward to seeing the outputs and conclusions of this meeting, which will, I hope, lead us to developing a strategy for developing, maintaining and protecting livestock routes for livestock development.

Thank you
Dr Gebrezhiabher Gebreyohannes

State Minister, Livestock Development Sector State Ministry, Ministry of Agriculture

Steps taken to improve livestock mobility in Ethiopia

Road signs

Traffic calming/slowing measures

Tunnels built under Addis-Djibouti railway

PRESENTATIONS

Summaries of the presentations given are provided here. The full presentation slides can be provided on request.

1. IGAD REGIONAL TRANSHUMANCE PROTOCOL – CONTENT AND IMPLICATIONS FOR *REGIONAL LIVESTOCK DEVELOPMENT*

Osman Babiker, Head, Social Economics, Policy and Marketing Development, IGAD Centre for Pastoral Areas and Livestock Development (ICPALD).

The IGAD region is rich in livestock resources (45% of cattle, 71% of camels and 35% of all livestock in Africa). About 80% of the region can be considered ASALs (arid and semi-arid lands). Around 42% of all livestock exports from Africa come from the IGAD region. It is estimated that livestock across the region contributes to 57% of regional agricultural gross domestic product (AGDP). Cross-border livestock mobility raises challenges for security and transboundary disease spread. A key responsibility for ICPALD is facilitating cross-border movement in a secure and safe way, including influencing better harmonisation of state responses to border communities.

In response ICPALD has developed a draft regional Protocol on Regulation of Transhumance between IGAD Member States. This has taken lessons learned from ECOWAS (Economic Community of West African States) across West Africa, and cross-border protocols and pastoral codes, laws and charters facilitating movement there.

Protocol means “a system of rules that explain the correct conduct and procedures to be followed in formal situations.” According to IGAD’s Agreement, a protocol has the same legal force as the Agreement. The Protocol has two objectives:

i) Facilitating the free, safe and humane passage of transhumant livestock and herdsmen (male and female) across borders of all Member States for water and pasture under conditions set in the protocol; and

ii) Providing legal protection to the transhumance of herdsmen accompanying their livestock in host countries.

Issues to consider in the implementation of the protocol include bilateral agreements, early warning systems, identification and mapping of corridors, harmonisation of animal disease control policies and legislation, different types of movement, timings, stocking and capacity, stray animals, national and regional regulatory bodies, and integrated land use plans.

In addition the issuing of Transhumance Certificates is considered. These Certificates would be issued in order to provide for movement cross-borders. Those livestock that are not covered by a Transhumance Certificate would be quarantined with costs incurred. Certificates are required to “ascertain health and to inform about number, composition and health status of transhumant livestock.”

Chapter six, Articles 25-26 describes how the Protocol would be implemented and IGAD's role within this.

The Protocol is seen as an instrument "to domesticate and implement the AU-Pastoral Policy Framework (2010)." In order to finalise the Protocol wider stakeholder consultation, and engagement and awareness raising with policy makers will be carried out. Ways of rolling-out the Protocol through Member States will be identified. Resources to implement the Protocol are being mobilised.

2. A NATIONAL MAP OF LIVESTOCK ROUTES IN TANZANIA – PROCESS AND USES

M. Mashingo, F. Flintan, G. Msalya, M. Said, S. Kifugo, F. Otieno and J. Chrizostom

Presented by: *Maria Mashingo, Animal Scientist, Head, Research, Training and Extension Department, Ministry of Livestock and Fisheries Development, Tanzania*

Easy and safe movement of livestock is vital if marketing is to be supported and facilitated. Livestock routes are a key factor to be considered in livestock development, trade and marketing including exports. Livestock movement not only benefits livestock producers but also traders, feed resource producers and suppliers.

Most livestock routes in Tanzania are not formally designated or protected. In 2009 however a 300 km stock route crossing 13 regions in north, central and coastal areas, was formalised by the government.

Though some mapping of routes had been undertaken, these were out of date including information on the status of the routes and services along them. In the context of increasing competition over land, routes are increasingly being encroached and blocked. Where routes no longer exist livestock is trekked along roads. There are opportunities to include information on livestock routes in land use planning processes at different levels.

In 2010 the government enacted the Grazing Land and Animal Feed Resources Act, which includes clauses that protect grazing lands and livestock routes. Article 16 states:

i) The grazing lands shall be demarcated and delineated in accordance with the provisions of the Village Land Act and Land Use Planning Act.

ii) Without prejudice to the generality of Section 32(1) of the Village Land Act, the Village Council shall grant the right of way for stock-driving for purposes of providing access to water, dipping, marketing facilities and other services which are not within the grazing-land.

The Act needs to be implemented including the development of guidelines for stock routes establishment and utilisation.

A process was undertaken to produce a first draft national map of livestock routes for the country. The purpose of this exercise was to give the 'big picture' providing information that could be used in strategic planning and investment of the livestock sector. This would lay the foundation for more detailed information collection and mapping at a later date.

The work commenced in mid-2013 with a series of meetings bringing together government livestock experts from the different regions of Tanzania. Routes were initially mapped on topographic maps (1:250,000), and supporting information collected on services found along the routes and their status. Experts from each major region in Tanzania worked in teams. Two types of stock routes were identified – major and minor routes (broadly classified according to use/numbers). Both functional and non-functional routes were mapped. Seasonal use of routes was also noted. Each class of route was coloured differently. Markets were identified as primary, secondary or border[1]. Infrastructure mapped included night camps, check points, holding grounds, quarantine facilities, water points, loading and off-loading facilities, slaughter houses and dipping tanks. Each team checked the information provided with secondary data and opinions of their colleagues back in their offices.

Mapping livestock routes on topographical maps before digitising

The information was then digitised with support from ILRI. The topographic maps were re-scanned and information transferred to GIS. Different attributes were coded and a database developed. The sixty topographical maps were edge-matched forming mapping sheets. Information was triangulated with information from satellite images

[1] In Tanzania there about 300 primary markets are administered by local government authorities and supply animals for local market and to secondary and terminal markets supplying urban and export demands. The four terminal markets, administered by the Minister of Livestock Fisheries and Development, together with 13 holding areas, 10 railway cattle loading ramps, 15 veterinary checkpoints and modern abattoirs.

and auxiliary information. Once digitised each regional/zone map was checked by the relevant team members and any corrections made.

The next step planned is to verify the information collected on the ground. Additional information will be sourced on such as livestock numbers and land uses in the areas of the routes. It is anticipated that thematic maps will be produced on the following:

1. Land uses, human populations etc. around the stock routes.
2. Livestock numbers and densities (at different times) using routes.
3. Range conditions and available feed sources along routes based on average wet/dry season long-term averages through use of NDVI (normalised difference vegetation index) data – though variability of these will need to be taken into account.
4. A mapping of disease prevalence and spread along/around routes.

The national map and future maps made for regions, districts etc. will be used for the following purposes:

- Supporting improved rangeland management by combining information on movements with available forage, fodder, vegetation and livestock densities.

- In land use planning purposes at different levels, which can lead to improved protection of the routes through different mechanisms.

- Reducing conflicts between different land uses and developing investment plans.

- For better targeting of breeding programmes and conservation of local animal genetic resources for commercial and subsistence enterprises; as well as for better targeting of veterinary services, livestock insurance and other services.

- Enhancing livestock trade between neighbouring countries.

- Data can be used in research and training by various academic disciplines.

3. MAPPING, SERVICING AND PROTECTING LIVESTOCK ROUTES IN SUDAN

Yousif Mohammed Gesem Elberi, Livestock Economics and Planning Directorate, Ministry of Livestock Fisheries and Rangelands; and Hussein Sulieman, Director Department for Remote Sensing & GIS, Gadarif University and National Monitoring Coordinator/Consultant Tufts University

Pastoralism is the source of living for around 40% of Sudan's population, with around 105 million heads of livestock found in the rangelands. Major livestock movements are undertaken to access a) markets, and b) grazing, including across borders.

Major border livestock movements in/out of Sudan

Livestock routes are found across the country, with states responsible for their regulation and upkeep. The widths of livestock route may or may not be defined by the state government and range from 1 to 4 kms wide (though studies show that the suitable width of the routes is between 4-6 kms). Many major routes run from western states through to Khartoum where the major markets are found. A new 'southern' route is being proposed.

An increase in population including an influx of agriculturalists, as well as the fencing off of areas for petroleum exploration, has meant the blockage of many routes. Legislation that is meant to protect the routes has not been implemented; and there is a weak flow of funding to implement projects supporting the routes. The separation of South Sudan has aggravated the situation particularly for those pastoralists that had previously used summer grazing areas there. The result has been increasing conflicts between farmers and herders; and rangeland degradation including loss of plant diversity.

Major livestock routes in Sudan

direction	Length in km	No of stock routs	state	No
North South	4871	11	The Greater Darfur	1
North South	4668	12	The greater kordufan	2
North South	1022	8	Central Sudan, the Blue Nile and White Nile , Sennar and Gezira	3
North South	860	7	algadarif	4

There have been a number of projects and interventions that have supported livestock route mapping and demarcation. An IFAD-supported project focused on the states bordering South Sudan in order to ease livestock movement and secure feed and water, whilst reducing conflicts. 3,070 km of livestock routes were demarcated, with services provided along the routes including checkpoints, conflict resolution centres (including committee), *hafirs* (water storage tanks), water yards, and crush pens. Mobile veterinary clinics and pastoral camps were also developed, and through which animals were treated and/or vaccinated. Water ponds and dams were rehabilitated. After demarcation Stock Route Co-Management Groups were set up at state and local levels to monitor and supervise the routes, register them, resolve conflicts, and revise and update relevant legislation.

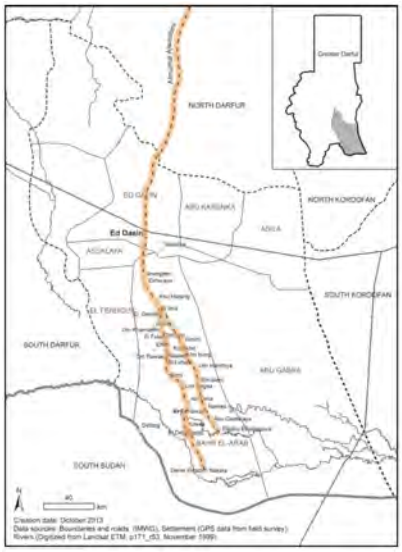
Demarcation of livestock route with beacons helps protect them from encroachment and blockage

In a different initiative the Feinstein International Center, Tufts University has been working with the Government of Sudan and Gadarif University to better understand the location and use of livestock routes and herd management in North Kordofan and East Darfur States, Sudan. A set of methods were used to collect the information including longitudinal monitoring of seasonal livestock movement, herder 'livelihood' profiles,

'herder recall' of last year's movements, weekly phone interviews of herders, regular outreach visits, and GPS tracking and monitoring of livestock movements. This was combined with an analysis of monthly NDVI data and vegetation changes.

Eleven livestock routes were identified in South Darfur. The major route was mapped across all herders, with additional mapping of individual herder movements showing variability due to such as changes in available vegetation or presence of conflict. Mapping of routes taken by individual herders to access water (often meaning moving off the livestock corridor and venturing into cultivation areas) were also carried out. And there were also examples found of 'free movement' i.e. not keeping to a particular route by such as camel herders in North Kordofan.

Central Corridor livestock route across South Darfur State



Cattle herder response to greening in 2013

The mapping experience captured important information and characteristics of the livestock production systems in the two States including daily and seasonal patterns of movements; day and night-time movements; movement across different land use types; and movement during conflict events. It also provided important insights in and for improving land management. Information collected can be used in the planning of servicing delivery and its distribution.

4. THE MAPPING OF LIVESTOCK ROUTES FOR MARKET DEVELOPMENT IN NORTHERN KENYA: PARTICIPATORY MAPPING OF LIVESTOCK ROUTES IN SAMBURU COUNTY

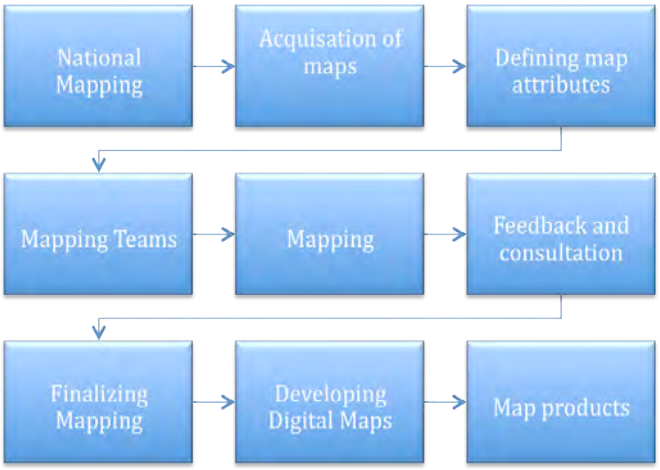
M. Said, S. Kifugo, F. Otieno, G. Miano and P. Ericksen

Presented by: *Polly Ericksen, Programme Leader, Livestock Systems and Environment, ILRI, Kenya*

Mapping of livestock routes can promote land development, efficient and targeted range management, promote investment in rangelands and improve livestock resources (production and breeds) and services.

ILRI was commission by SNV-Kenya and the EU-funded Kenya Rural Development Programme to map livestock routes in Samburu County in collaboration with Samburu Integrated Development Programme and Samburu County Government in 2014. This information would be used both for the project as an input into the development of markets for livestock, and by other stakeholders – for example by County government in anticipated county-level land use planning.

The mapping was carried out through the following steps:



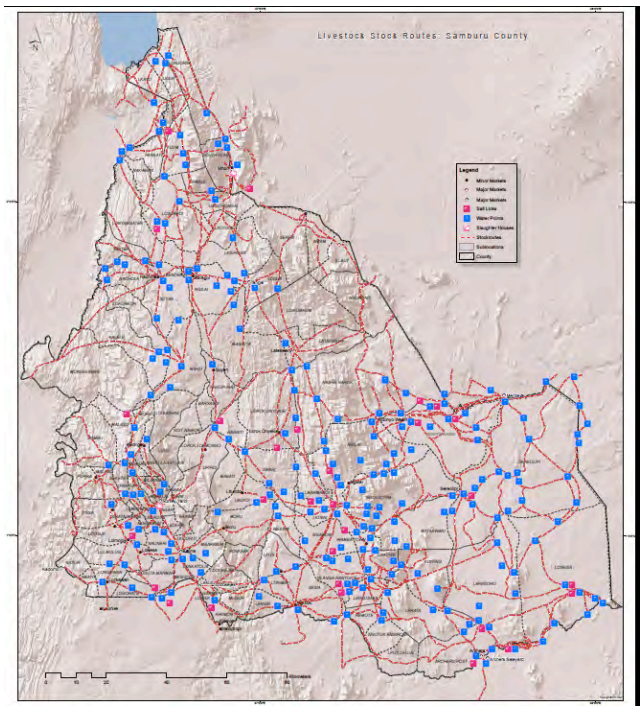
The process commenced with a meeting bringing together government livestock experts from the County, which as with all counties is divided into Divisions. The experts worked in teams grouped as Divisions. As with the process carried out in Tanzania (described

above) the team mapped out routes on topographic maps from which the information was digitised. Supporting written information on the routes was also documented.

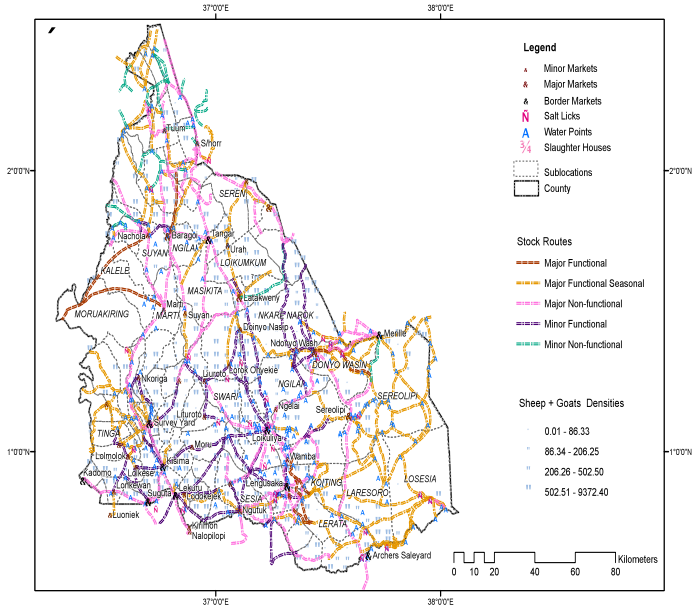
Edge-matching of maps from the various Divisions

Six types of routes were identified: major functional market day; major functional seasonal; major non-functional market; minor functional market; minor functional seasonal; and minor non-functional market. Three types of markets were identified – minor, major and border – based on the following characteristics: volume of livestock, prices, number and type of stakeholders, and location. The following infrastructure was mapped: slaughter houses, sale yards, dips, crush pens, holding pens, hay stores, salt licks, watering points (boreholes, wells and water pans).

Livestock routes in Samburu County



Details of the different types of routes



The information collected is being shared with local communities, policy and decision makers at various levels including at county and national, and research institutions, NGOs and investors.

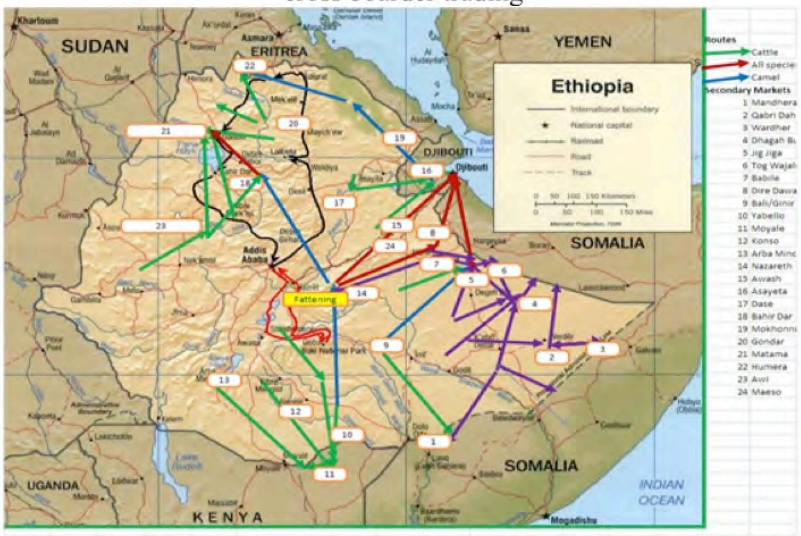
It is anticipated that the information can be used for mapping forage trends, locating water investments, and identifying market investments and capacity, amongst others.

5. A STUDY OF LIVESTOCK ROUTES AND LIVESTOCK VALUE CHAINS FOR COMESA

Amaha Kassahun, Ethiopian Institute for Agriculture Research (EIAR), Addis Ababa

In 2013 COMESA (Common Market for Eastern and Southern Africa) commissioned a study on livestock value chains including livestock routes in the eastern and southern Africa region. This presentation summarises the results of the study in Ethiopia and within border areas in neighbouring states. The study was carried out through a review of secondary data and stakeholder interviews with government, traders, tax collectors, NGOs, feedlot operators, abattoirs, livestock extension workers and professionals, and producers (commercial companies and communities). Limitations of the study included lack of a recent national census on livestock, unreliable data about livestock numbers and deaths, and lack of information on informal livestock routes.

Mapping the patterns of informal livestock routes in the informal cross boarder trading



The informal livestock routes in Afar region up to destination

Supply routes from Afar Region	Outlet routes	Destination	Livestock type
All Afar markets- Nazareth	Via Nazareth-Metahara – Awash-Semera -	Djibouti/meat export	Shoats
South Afar-Awash-Fentale-Werer	Mojo/Debre-Zeit-Semera-	Djibouti/meat export	Shoats
All Afar- Yallo-Chiffra	Via Assaita-Dekelli	Djibouti/meat export	Shoats
Chifra-Yallo-Bati	Via Kombolcha-Djibouti	Djibouti/meat export	Shoats
All Afar –Awash-Wollo	Via Mohoni-Mekelle-Humera (Tigray)	Sudan	Camels
Southern Afar-Awash-Werer	Via Mojo/Debrezeit	Djibouti/meat export	
Yallow-Dulecha-Amibara-Chifra	Via Mohonni-Mekelle	Meat export	Shoats, cattle
Chiffra-Bati	Via Kombolcha	Meat export	

The informal livestock routes in Amhara region up to destination

Supply routes from Amhara Region	Outlet routes	Destination	Livestock type
A. From Northern Gonder zone			
. Debarik market through Dabat to Gondar-Metema	Via Bereketnur and Tiha	Sudan	Cattle, shoats
. Dembia-Chilga-Alafa –Gonder areas-Chilga-Metema	Via Bereketnur and Tiha	Sudan	Cattle, Shoats
. Tsegede-Tach & western Armachoho-Metema	Via Bereketnur-Abdurafi/Abrehajira	Sudan	Cattle, Shoats
. Alefa and Quara wereda and surroundings-Meteme	Via Bereketnur- Tiha-Abdurafi	Sudan	Cattle, Shoats
Lay Armacheho-Tsegede through Dansha	Via Humera-Asira/Abderafi	Sudan	Cattle, Shoats
B. From western Gojam zoneWollo	**Outlet routes**	**Destination**	**Livestock type**
. Awi-Achefer and Mecha – Chelgi through Metema	Via Tiha-and Galabat	Sudan	Cattle, Shoats
. Yilma Densa-Bahir Dar – Gonder throught Metema	Via Tiha-and Galabat	Sudan	Cattle, Shoats
. Dessie – Kombolcha – Bati	Via Semera - Asyhita	Djibouti	Cattle, shoats
C. From other areas (mainly Oromiya region)	**Outlet routes**	**Destination**	**Livestock type**
. From Welega zone through Bure-Gonder-Metema	Via Tiha-and Galabat	Sudan	Cattle, Shoats
. From Sellale zone – Bahir Dar – Gonder -Metema	Via Tiha-and Galabat/Abdurafi	Sudan	Cattle, Shoats
South-eastern Ethiopia-Mojo-Addis-Bahir Dar-Metema	Via Tiha-and Galabat	Sudan	Camels

The informal livestock routes in Dire-Dawa Administration up to destination

Supply routes from Dire-Dawa	Outlet routes	Destination	Livestock type
Negelle Borana -Yabello	Via Mojo – Nazereth – Awash – Dire Dawa	Djibouti	Cattle, camel
South Omo – Yabello	Via Mojo – Nazereth – Awash – Dire Dawa	Djibouti	Cattle, camel
Eastern Harerighe – Dengego	Via Dire Dawa	Djibouti	Cattle, shoats
Western Harerighe - Dengego	Via Dire Dawa	Djibouti	Cattle, shoats
Degahabur – Bati –Harer	Via Dengego – Die-Dawa	Djibouti	Cattle, shoats
Somali region –jigjiga – Bati	Via Dire Dawa	Djibouti	Cattle, Camels
All Shinille zone	Via Dire Dawa	Djibouti	Cattle, Camels
All Shinille zone	Via Dire Dawa	Djibouti	Shoats
Afar region – Awash – Erer	Via Dire Dawa	Djibouti	Cattle, Camels

The informal livestock routes in SNNP and Oromiay regions up to destination

Supply Routes	Outlet routes	Destination	Livestock type
The SNNP Regional State			
Arbaminch and South Omo zones through Konso	Via Yabello to Moyalle	Kenya	Cattle, shoats
. Hawassa-Gedeo -Kibremengist to Hageremariam	Via Yabello to Moyalle	Kenya	Cattle, shoats
. Kaffa, Bench Magi and Sheka zones	Via Dima area	Kenya	Cattle
The Oromiya Regional State			
. Negelle Borona-Yabell through Mojo to Nazareth	Via Metahara and Awash	Djibouti	Cattle, camels
. Negelle Borona-Yabell- Mojo-Nazareth- Awash	Via Dire Dawa	Djibouti	Cattle, camels
. Bale, Arsi, Mechara, Gelemso through Arberekete	Via Dire Dawa	Djibouti	Cattle, shoats
. Western Harerge-Webera-Garamuleta-Kulubi-Dengego	Via Dire Dawa	Djibouti	Cattle, shoats
. Negelle Borona-Yabello-SNNP-Mojo - Addis Ababa	Via Bahir-Dar (Amhara)- Metema	The Sudan	Camels
. West and East Harerghe-Bale- Arsi- Dawe	Via Dire Dawa	Djibouti	Cattle, shoats
From same 2.6	Via Bombass-Medin-Dawe-Mubisa - Lefeissa	Somalia	Cattle, camels, shoats
From same 2.6	Via Medin-Dawe-Harabi-Goguti-Biye-Gurgur	Somalia	Cattle, camels, shoats
From same 2.6	Via Medin-Dawe, Harabi, Goguti- Biye-Gurgur -Hajim	Somali, Djibouti	Cattle, camels and shoats

The informal livestock routes in the Ethiopia Somali region up to destination

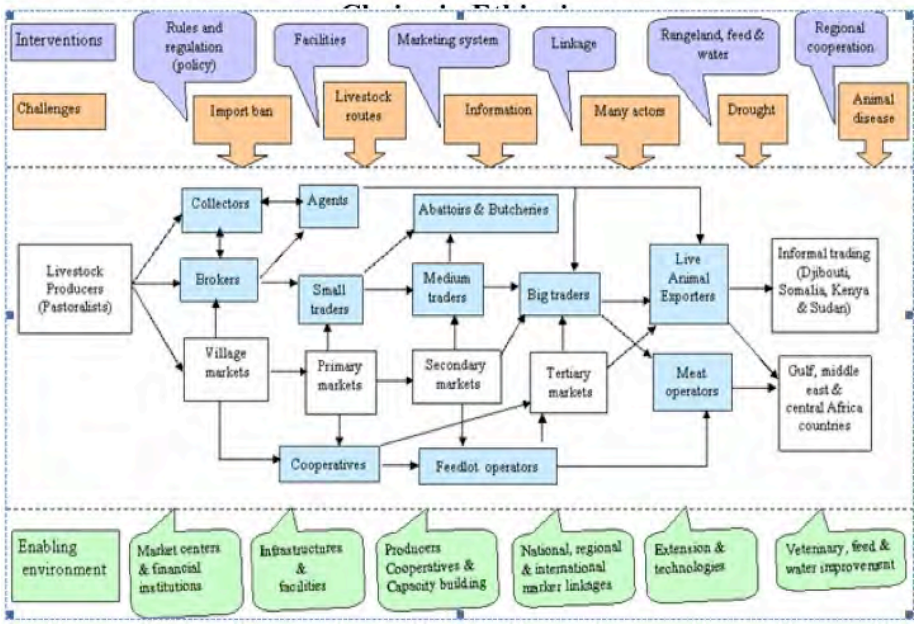
Supply routes from Somali Region	Outlet routes	Destination	Livestock type
.Fiq-Harero-Duhi-Sgig-Gelbo	Via Deg-Habur-Jigjiga-Dire-Dawa-	Djibouti	Shoats
. Gode-Denan-Emi-Elkere-Qalafo-	Via Deg-Habur-Kebri-Beyah-Harewein	Somalia/Bosaso	Shoats
. Qorahe-Shilabo-Doboign-Kebri-Dahar-Shekosh	Via Deg-Habur-Kebri-Beyah-Hartishek	Somalia/Berbera	Shoats
. Warder-Mustahil-Abuwarie-	Via Deg-Habur-Kebri-Beyah-Hartishek-Via Harebi-Gogud-Dembel-Hajim	Djibouti/Somali	Shoats
Warder-Mustahil-Abuwarie	Via Deg-Habur – Hartishek - Duba-Id	Somalia/Berbera	Shoats
. Liben-Negelle	Via Moyalle	Kenya/Nairobi	Shoats, cattle
. Afder-Luuk	Via Kismayo	Somalia/Mqadisho	Shoats
. Dolo-Ado-Mandera	Via Wajira	Kenya/Nairobi	Shoats, cattle
Kebridahar	Via Warder	Somalia/Bosaso	Shoats, cattle
From all Ogaden areas through Fik	Via Babile-Jigjiga-Wochale	Somalia	Camel, cattle
. From all Ogaden – Fik	Via Babile-Fafem-Cinaksen-Fedis-Wochale	Somalia	Camel, cattle
. From all Ogaden – Fik	Via Babile-Dire-Dawa	Djibouti	All type
. Assita-Dibuti-Elywha-Mille	Via Dekel	Djibouti	Cattle, shoats

The informal livestock routes in Tigray region up to destination

. Supply routes from Tigray Region	Outlet routes	Destination	Livestock type
. From Selemti and Tsegede weredas through Humera	Via Aberafi	Sudan	Cattle, Shoats
. From Wekait - Dansh through Humera	Via Aberafi	Sudan	Cattle, Shoats
. From Sheraro – Tsegede- through Humera	Via Aberafi	Sudan	Cattle, Shoats
. From Laelay and Tahitay Adibo weredas - Humera	Via Aberafi	Sudan	Cattle, Shoats
From Humera wereda and surrounding	Via Aberafi	Sudan	Cattle, Shoats
. From Afar-Alamata-Mohonni-Shire-Sheraro-Humera	Via Aberafi	Sudan	Camels

Dr Amaha also considered the value chains of livestock and livestock products such as hides and skins.

The Map of the Formal and Informal Live Animal and Meat Market

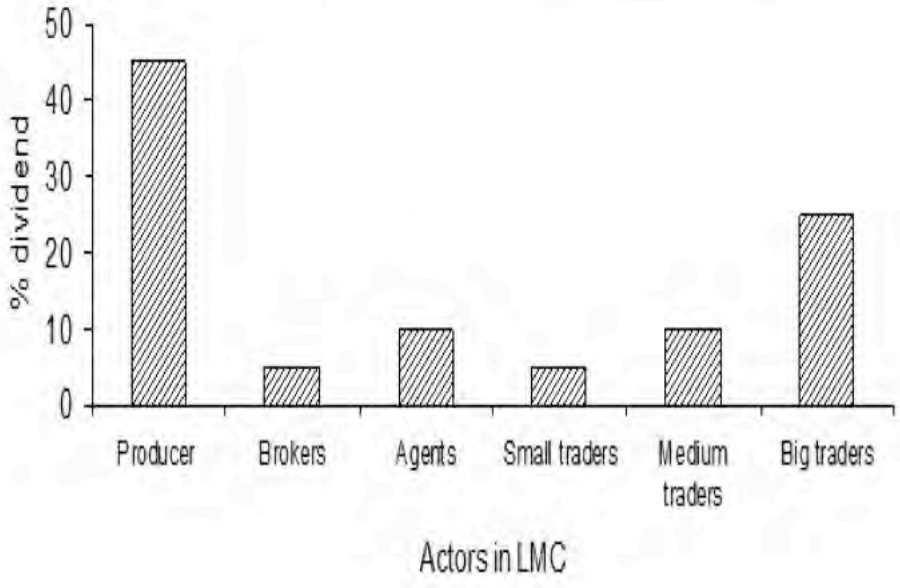


Estimated type and number of Informally traded animals from Ethiopia and the share of each regional state in the value chain (2013)

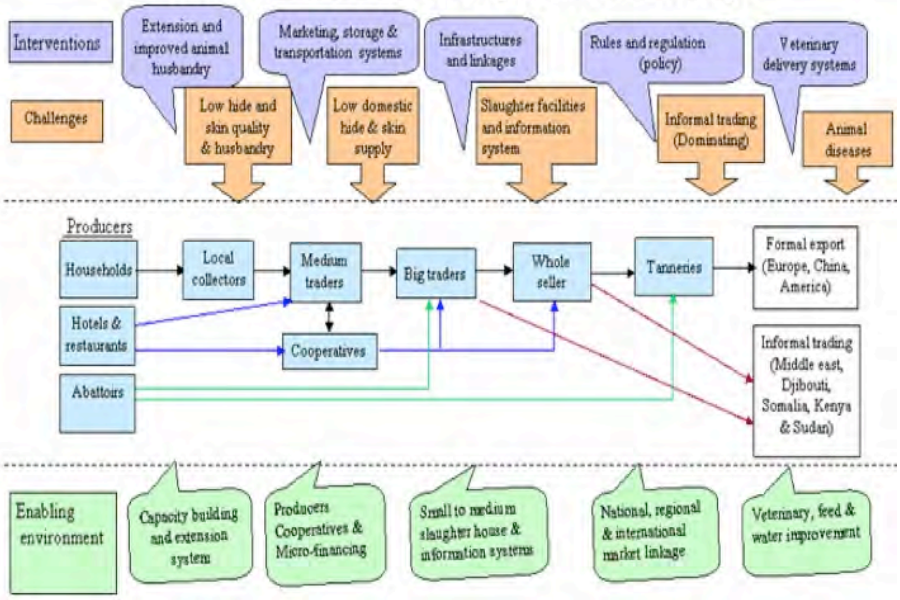
No	The regional states of Ethiopia	Number and type of the livestock				
		Cattle	Sheep	Goats	Camels	Total
1	Oromiya Regional State[NB1]	385,000	285,000	350,000	60,000	1,080,000
2	Southern Nations Regional State	80,000	189400	450,000	0	719,400
3	Somali Regional State	350,000	550,000	600,000	280,000	1,780,000
4	Afar Regional State	100,000	440,000	250,000	120,000	910,000
5	Dire Dawa Federal Administration	70,000	100,300	90,000	40,000	300,300
6	Amhara Regional State	280,000	220,000	200,000	0	700,000
7	Tigray Regional State	220000	150,000	200,000	0	570,000
	Total number of livestock lose	**1,485,000**	**1,934,700**	**2,140,000**	**500,000**	**6,859,700**

Producers receive less than 45% of the total income from livestock in the informal cross-border trade value chain, with larger traders benefiting more than smaller ones.

Average percent dividend shares by the main market actors in the informal cross boarder livestock trading within the value chains



The Map of the informal cross border raw hides and skins trading in the value chains for livestock products in Ethiopia



Estimated type and number of Informally traded hides and skins from Ethiopia and the share of each regional state in the value chain (2013)

No.	The regional states of Ethiopia	Estimated type and number of commodities		
		Hides	Skins	Total
1	Tigray	100,000	200,000	300,000
2	Amhara	225,000	350,000	575,000
3	Oromiya	2,800,000	6,000,000	8,800,000
4	SNNP	450,000	900,000	1,350,000
5	Dire Dawa	200,000	500,000	700,000
6	Somali	850,000	2,000,000	2,850,000
7	Afar	300,000	1,000,000	1,300,000
8	Benshangul*	NA	NA	NA
9	Gambella*	NA	NA	NA
10	Harari*	NA	NA	NA
	Total	**4,925,000**	**10,950,000**	**15,875,000**

Despite the obvious vitality of the informal cross-border trade, there are many challenges. These include:

- Lack of road networks and marketing systems that link pastoralists to the national meat industry.
- Lack of facilities and services (shade, water, veterinary etc) along the routes, hence high predator and health risks.

- Informal routes leading to lower livestock prices and information on prices not available (producers/sellers at the mercy of buyers).
- Lack of formalisation of the routes risks conflicts between grazers and farmers, and through theft.
- Lack of transportation systems for safe animal trucking on formal routes.
- Lack of livestock collection centres with marketing facilities to attract pastoralists.
- Lack of recognition of the informal livestock trade by federal and regional governments means lack of investment and control.
- Long chains of actors involved in the livestock production system, meaning pastoralists only gain a small proportion of the total income raised.
- Degradation of rangelands, lack of investment in rehabilitation, exposes pastoralists to feed and water shortages along routes.
- Lack of extension system and low awareness on value-addition of livestock and livestock products by producers.

At the same time as these challenges there are several opportunities for increasing livestock trade and improving the value chain. A key step would be the protection of livestock routes and better services along them, and there is increasingly recognition of the need for this both within countries and crossing borders. This is supported by the promotion of regional continental markets and trade integration through such as COMESA, NEPAD and AU. The demand for livestock products is high both within country and for export – Ethiopia is well-placed to serve the Middle East in particular. There are steady improvements in infrastructure, availability of such as refrigeration, and demand for livestock products such as leather. Improved access to banking and microfinance means can improve willingness to invest in business. Extension services for livestock production systems are improving, though this still requires significant investment.

Conclusions and recommendations:

- Informal routes should be given regional and federal recognition, legally protected institutionalised and movement facilitated along them through the provision of adequate infrastructures.

- Main supply locations should be developed as well-serviced livestock holding areas and hides and skins supply locations, including shades, feed, water, veterinary services and information systems.

- Informal routes should be developed with facilities, infrastructure, transportation, extension, and markets. Research into the use of the routes will optimise the efficiency of the routes and their use.

- Value chains should be shortened to allow links between producers and end users to be established. Awareness of how to improve value chains and add-value should be raised amongst producers, agro-processors, and investors.

- Cooperation between countries in the region should be enhanced including the facilitation of cross-border livestock trade and necessary health controls as part of this.

6. HIGHLAND-LOWLAND LINKAGES – UNDERSTANDING THE *GODANTU* SYSTEM THROUGH MAPPING LIVESTOCK ROUTES N BALE MOUNTAINS ECO-REGION

Worku Chibssa, Fiona Flintan, Dida Wako and Andrew Ridgewell

Presented by: Worku Chibssa, CARE Ethiopia

The study described in the presentation was undertaken in 2007-8 through a FARM Africa/SOS Sahel Ethiopia-supported project working in the Bale Eco-Region. It is anticipated that a follow up study will be undertaken over the next three months under the EU-supported SHARE project in Bale and IWMI (International Water Management Institute), using the information here as a baseline.

The distribution and use of livestock routes was understood through community mapping, and follow up interviews and focus group discussions with different stakeholder groups

Livestock production has been the main livelihood system in Bale for many centuries. Traditionally this was managed communally. The weakening of the communal land system began in 1950 when land measurement (*galad*) was introduced for taxation purposes. Land alienation led to the first Bale uprising between 1963-1970. During Haile Selassie's regime all communal land was declared as belonging to the State. This continued through the Dergue period, during which time farming expanded. Livestock was pushed up to higher altitudes and forest areas. The Bale Mountains National Park was established in 1970, incorporating 2,400 km sq. At times local communities have

been moved out of the Park, but enforcement has been poor. There continues to be tension between local communities and conservation authorities. As a result of these pressures livestock ownership has decreased.

PA	Haile Selassie	Dergue	EPRDF
Fasil Angeso	Rich: 210-310 Medium: 125 Poor: 20-50	Rich: 80-125 Medium: 45-50 Poor: 5-20	Rich: 30-75 Medium: 10 Poor: 0-2
Hilassa	500+ cattle, 20+ equines, 40+ shoats	25-30 cattle, 5 equines, 20 shoats	4 cattle, 1 equine, 5 shoats
Ashuta	Rich: 160c & 35eq Med: 80c & 12 eq Poor: 20c & 3 eq	Rich: 80c & 20 eq Med: 50c & 5 eq Poor: 10c & 2 eq	40c & 8 eq 15c & 6 eq 5c & 2 eq
Solana	Rich: 5-20 cattle	Rich: 15 various	Rich: 5 various
Garambamo	500 livestock or 200 cattle	400 livestock or 100 cattle	300 livestock or 50 cattle
Sodu Welmel	Rich: 120+ livestock	Rich: 70+ livestock	Rich: 10-20 livestock
Melka Arba	Average: 100-150 livestock	Average: 65 livestock	Average: 30 livestock
Berak	Average: 100 livestock	Average: 50 livestock	Average: 5 livestock

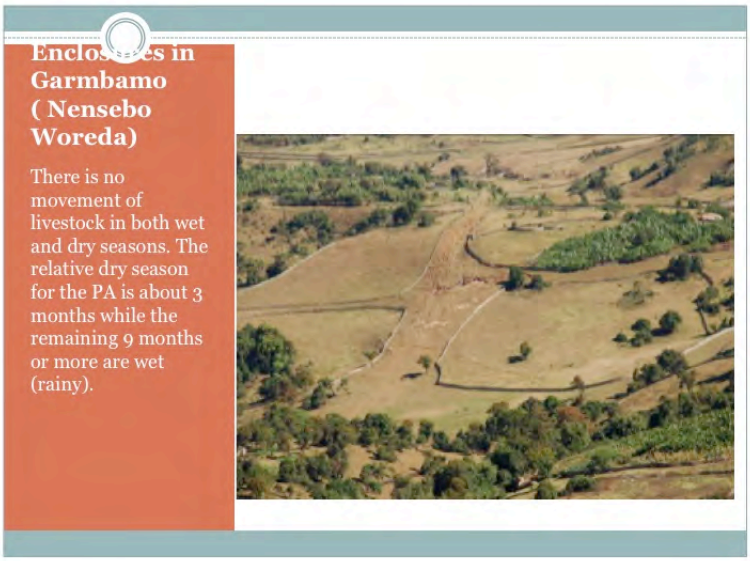
Movement of livestock in the Bale Mountains Eco-region occurs seasonally following the practice of *godantu* as described here. Livestock are split into the *fora*, which are taken to distant pastures, and *warra* which remain close to the homestead. *Fora* herds are moved in two main directions: one, from lowland to highland and forest areas during the dry season for water and grazing, and to get away from livestock diseases. These areas are cooler, shaded and provide grazing and browse. And two, movement to lower altitudes during the wet season when surface water is available there. However, those living in mid-altitudes where agriculture is possible during wetter months may take livestock up to the Sanetti Plateau (rather than down to the lowlands).

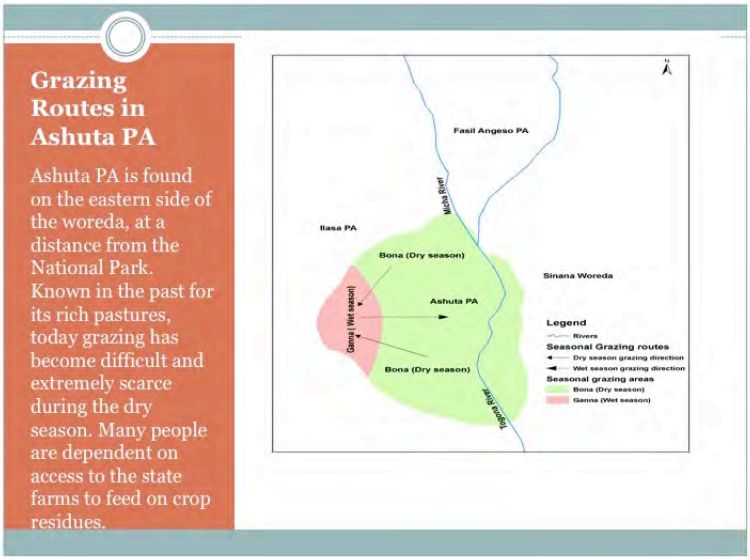
Polygamous relationships amongst the local communities are common in the area providing an opportunity for a family to be split across the different land ecologies/altitudes e.g. a man may have one wife in the highland areas, and one wife in the lower altitude areas, and he moves between the two with the livestock according to the seasons and grazing availability. A man might also have a third wife living in the town, managing a business there.

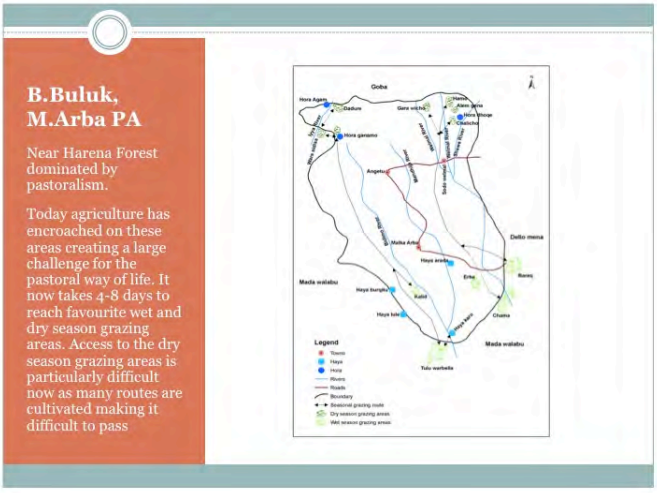
There have been recent changes in land use and land management, which have impacts on livestock mobility and increased incidents of conflicts over land and/or between livestock and wildlife. Population increase has heightened the demand for land, with youth being allocated land (often grazing land) and immigrants from other parts of Oromia being resettled in the southern part of the Bale Eco-Region. Land certification has been carried out in many parts – on an individual basis. In some villages what was

open though managed communal land, is now completely enclosed, for example in Garambamo PA, Nensebo woreda (see below). Community members complained that livestock movements take much longer than in the past. As one Elder from Melka Arba PA explained:

> *It used to take me four days to arrive at the dry season grazing site resting on my way at certain destinations, as previously. However, now this year I spent eight and a half days just getting there since the routes are cultivated and it is difficult to pass through. I fear that in the future that all the outlets will be closed and we might be choked to death.*







Despite these challenges livestock is still seen to be a valuable production system. Social groups perceived as more wealthy than others were a) those that have diversified livelihoods but still kept livestock; and b) Those that have intensified their livestock production systems.

Recommendations:

- There needs to be improved land use planning in the area to reconcile conflicting land uses, and the challenges occurring to the livestock/mixed-livestock production system and required mobility.
- Communities need to be included in decision-making processes over land use in the area.
- Livestock routes need to be considered within land use planning and land use decision-making processes, and protected.
- A landscape/watershed approach is recommended for land use planning and management in order to take into account the linkages across altitudes, different use and management of the land, and across social and livelihood systems.

7. LIVESTOCK MOVEMENTS IN BORANA AS INPUT TO THE DEVELOPMENT OF IBLI (INDEX-BASED LIVESTOCK INSURANCE)

Masresha Taye, Scientist, ILRI, Ethiopia

IBLI (index-based livestock insurance) was launched in 2008, and piloting commenced in northern Kenya in 2010 and southern Ethiopia in 2012. IBLI is an insurance system for livestock linked trends and changes in vegetation availability. To date over 10,000 pastoralists have purchased IBLI, leading to a 36% reduction in distress livestock sales; and a 25% decrease in the likelihood of reducing meals as a coping strategy in times of drought. In Borana, Ethiopia IBLI has insured 2,613 pastoralists with livestock valued at US$1.5 million and has paid out US$31,000 in indemnities through Oromia Insurance Company. The current sum insured amounts to around US$700,000. Now IBLI is transitioning from establishing processes of asset replacement to asset protection.

In order to better understand herd migrations so that IBLI can better serve these, a study was carried out. This focused on:

1) What herd migration behaviours are observed among the cattle of Borana, and how can these be statistically characterised and distinguished.

2) How are cattle herd migrations distributed in space and time in pastoral commons?

3) What is the implication of cattle behaviours on common pool resource management?

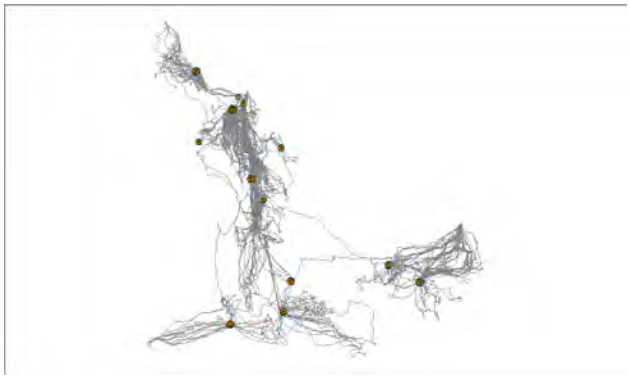
The study was carried out in five sites in Borana zone – Siqu, Shomo, Irbi, Taka Bulti and El Dima. 12 GPS collars were put on cattle from four households in each site so movements could be tracked. In May 2014 the research team also followed one household in each of the five villages to collect GPS-synchronised videography of cattle behaviours (amounting to a total of 70 video shoots).

Two types of patterns were identified:

a) In some areas such as Siqu and Sarite animals were walked long distances before they started to graze. It was also seen that cattle grazing pressure decreases as the distance from settlement locations increases – heavy grazing tended to happen at a distance from camps/settlements.

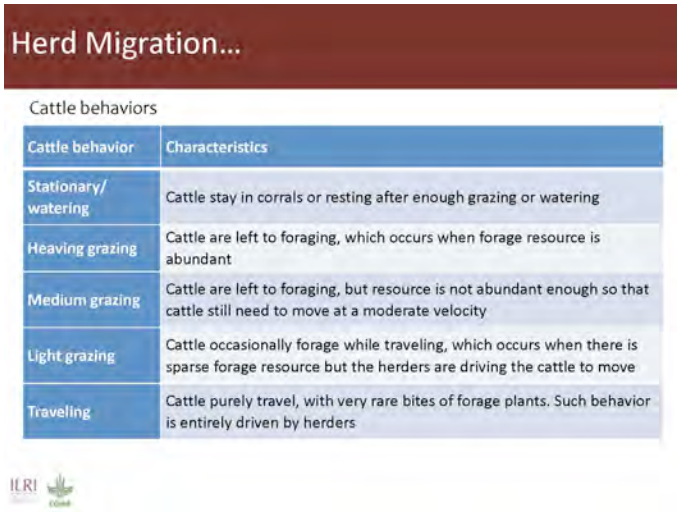
b) In contrast, in Wachille, Irbi and Hoboq, cattle started grazing as soon as they left their base camps.

Herd migrations of cattle from Wachille, where livestock started grazing as soon as they left the base camps – base camp is the larger dot in the top area of the map



The reasons for moving had implications on the distances that they moved:
i) Watering or stationary cattle moved at below 0.21 km/h
ii) Cattle that were grazing heavily moved between 0.21-1.06 km/h
iii) Medium grazing allowed cattle to travel between 1.06-1.94 km/h
iv) Light grazing allowed cattle to travel between 1.94-2.77 km/h
v) If cattle were travelling from A to B then they moved at more than 2.77 km/h

These types of movement can be understood as the following:



8. MAPPING AND UNDERSTANDING LIVESTOCK ROUTES IN AFAR THROUGH REMOTE SENSING

Ben Sonneveld, Saket Pande, Kidane Giogis (CIFOR), A. Seid Ali (Afar Pastoral Areas Research Institute), Abuhay Takele and M. Keyzer

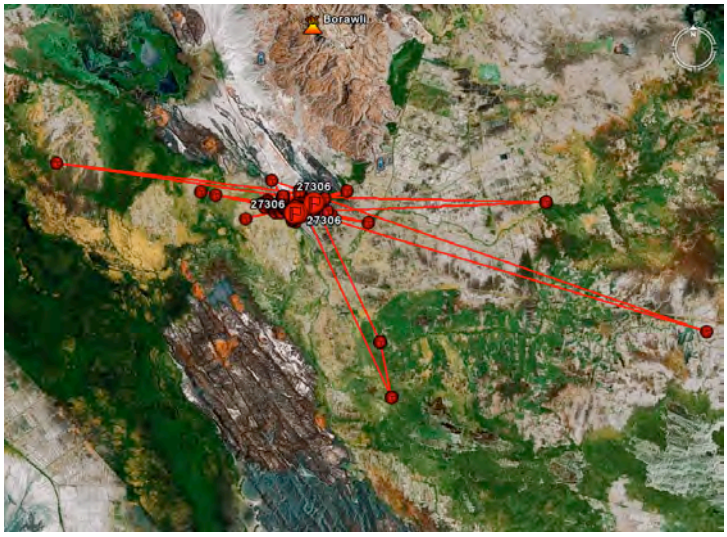
Presented by A. Seid Ali, APARI

The research was carried out through a partnership between EIAR, APARI, Centre for World Food Studies, Texas A & M University, Bayreuth University, CLS (Argos) and VITO Belguim.

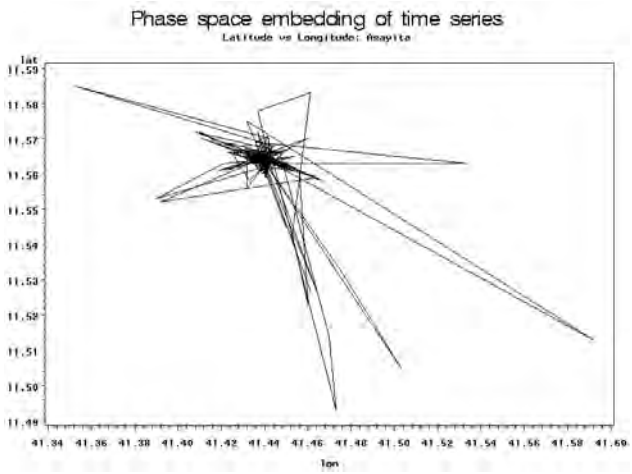
Today there are severe restrictions on mobility in the Afar region – much land is invaded by non-local species, there is agriculture attempted in some places, rangelands are degraded, and flooding of areas can also occur. Where to move?

As a way to understand livestock movements as part of livestock production strategies a study was carried out to understand the spatial and temporal routing of pastoralists, and the reasons for these movements. Methods used to collect information included a regional survey, mobile GPS (solar fed) back-packs carried by herders, remote tracking with beacons (ARGOS), in-depth surveys with farmers, and interviews with local and regional authorities. Point data was verified on the ground. Movements were then mapped and analysed

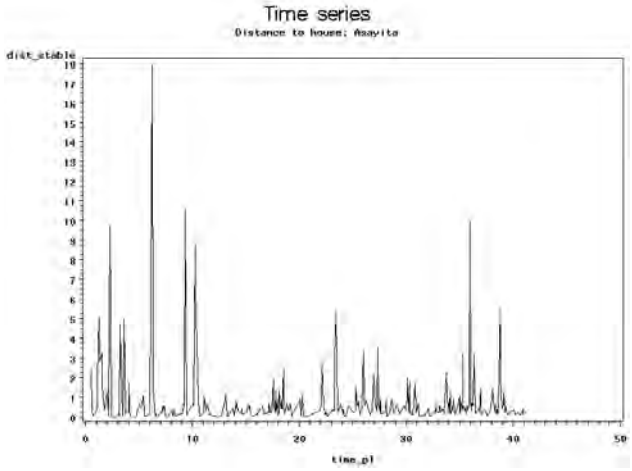
Movement of routes of pastoralists during the dry season of one household (with 5 camels, 35 cattle, 25 goats and 10 sheep managed by four shepherds), Awsi zone, Afar region. The cattle were moved to the Awash River in the dry season to use fodder on river banks. Market place – Assaiyta.



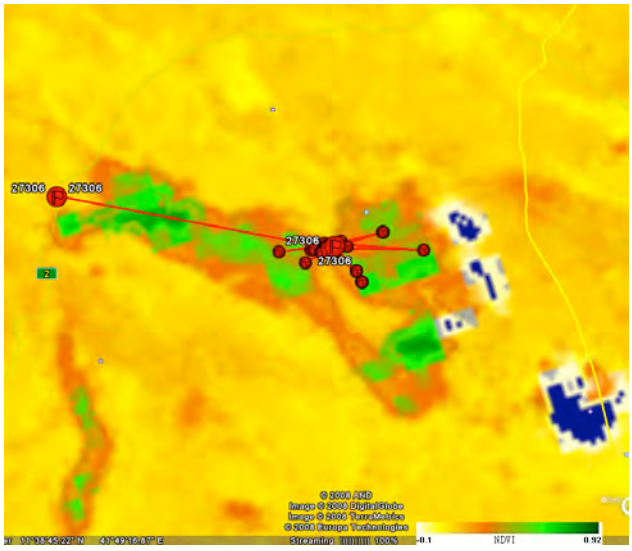
Data was then processed



Time series of data



Movements were analysed together with NDVI maps



In summary, during the dry season the distance covered by the case study household was 9.3 km per day, at a speed of 1.16 km/h (with minimum distance being 0.01 km and the maximum being 38.9 km moving at a distance of 4.9 km/hr). During the period of study the livestock were moved less than 1 km during 17 days, between 1-5 km during 17 days, and over 5 km during 8 days.

Solar-fed backpacks carrying GPS equipment

Recommendations from the study:

Additional research is required in the following areas:

a) Land productivity
   - Fraction of land uses from NDVI information
   - Development of production function for rangeland
   - Rangeland improvement
b) Animal productivity
   - Development of animal production function (loss function)
   - Development of micro-models of livestock routes
c) Livestock trekking (transport) model
   - Determine corridors
d) Analysis of household survey
e) Market information (relation prices with supply/demand)

The research group are planning further research in the area and more in-depth exploration of issues.

GROUPWORK REFLECTION AND DISCUSSION ON IMPLICATIONS OF PRESENTATIONS FOR LIVESTOCK ROUTES IN ETHIOPIA AND WAYS FORWARD

During general discussions, concerns were raised about how movement could be restricted if livestock routes and mobility are formalised. Several presenters had emphasised that control of movement is required to reduce negative impacts on the environment, natural resource use and health – yet this would likely mean some compromises of movement and the flexibility of these.

There was general agreement by all participants that livestock routes should be an important component of land use planning at different levels.

The participants then split into three groups to discuss issues, challenges, opportunities and ways forward on the subjects of Mapping (Group 1), Servicing (Group 2) and Protecting (Group 3) livestock routes. The following summarises the main discussion points from this group work.

Group 1: Mapping livestock routes

The members of Group 1 agreed that mapping, servicing and protecting routes was essential to support an industry and livelihoods based on transhumance pastoralism and agro-pastoralism. It was agreed that efforts to date are limited, locale specific, and vary in terms of methodologies, activities and outcomes. The group also felt that mapping social capital was lacking and of great importance, as was mapping of historical routes where possible to fully understand the dynamics and challenges of the industry and behaviour changes. The group did not agree, however, on whether or not a mapping exercise should incorporate land tenure concerns.

The group determined the following are important results that should result from mapping transhumant behavior, routes, and traditional territories:

a) Identification of critical gaps and support to new government policies
b) Supporting multi-scale land-use planning
c) Identification of interventions needs and strategies
d) Identification of mitigation needs where lands have been lost
e) Clarification and elaboration of environmental benefits and ecosystem function values
f) Identification of service delivery sites and needs
g) Improving awareness about behaviour
h) Harmonisation of resource use at multi-scales
i) May support conflict resolution
j) Supports risk management efforts
k) Strengthening of relationships between stakeholders

The group agreed that the process needed to be multi-scaled, participatory, and inclusive of all stakeholders, as well as integrative and iterative. It was also agreed that strong, independent and flexible leadership was required, to support the needs of all stakeholders, to avoid constraining the process and to ensure value at all scales for the different stakeholders. A full commitment to the process by all stakeholders was also deemed critical to any effort, as is the appropriate choice of variables to capture the full range of behaviour and needs. Mapping should be perceived as a tool for stimulating and formalising discussions and decision-making, among all relevant stakeholders.

A few perceived challenges include the current GoE policy to promote corporate/private development interests over communal resource interests, and the escalation of conflicts over limited water and forage resources, which may hinder mapping efforts. In contrast, it was recognised by all that initial results will most likely result in conflict between groups due to conflicting objectives.

Group 2: Servicing livestock routes

Before starting to give suggestions of what kind of services would be appropriate the group first tried to clarify and describe the different kinds of mobility routes that are found in Ethiopia. It was agreed that there were different types of routes that would require different types of services including routes used to access markets, and routes used to access resources such as grazing and water. It was agreed that a clearer understanding of where the routes are, their status and what if any services are provided along the routes is required in order to inform better planning processes as well as better servicing and protection of the routes.

It was agreed that the servicing of routes in Ethiopia is poor, and particularly when compared to such as Sudan and Tanzania where there are services provided along many routes including resting places, veterinary and livestock health services, and feed/water. In some cases human health services are also provided. In Tanzania such services are provided through a partnership between the public (government) and private sector. Such arrangements should be considered in Ethiopia.

There was a suggestion that livestock routes could be established where services are already available (i.e. to reduce investment in new or more services), however others argued that it is better to provide services along the routes that already exist and for example where several routes converge and/or where it is known that particularly large numbers of livestock move.

It was recommended that a mapping of major livestock routes (with the existence and status of services along the routes) is carried out. Decisions could then be made as to how to improve service delivery along the routes.

The following were the main services recommended:

- Livestock health services, including clinics (both fixed and mobile); quarantine services;
- Water;
- Extension services: which should include information on such as disease prevalence, status of routes and services and/or resources (e.g. grazing) ahead;
- Markets;
- Night camps including hay sales/provisions.

It was agreed that the Pastoral Directorate should play a leading role in livestock route mapping, protection and development.

<u>Group 3:</u> Protecting livestock routes

The group first defined what was meant by 'protection.' This was taken to mean "protecting livestock and rangeland resources, as well as securing access to the routes both for resources and marketing purposes."

It was agreed by the participants that there is increasing encroachment of livestock routes by other land uses such as farming and the building of infrastructure. This is particularly true in the highlands. There is no national or regional policy and legislation that protects livestock routes and this needs to be developed. Routes used locally and which may change more often due to such as drought, should be protected by local bylaws. It was agreed that in some cases there may be trade-offs between the protection of routes (which will require their identification, mapping and formalisation) and the flexibility experienced to date by pastoralists in their movement (and marketing) patterns – that is by formally protecting routes some of this flexibility and freedom of movement may be compromised or removed. This needs to be discussed and taken into account with local land users.

The group made the following major recommendations in order to protect livestock routes:

1.Better land use planning systems and investment policies

•Rangeland Investment needs to benefit the local people whose livelihoods are directly dependent on it and provide alternative ways of securing their livelihood in a way that is acceptable by the people whose livelihoods are affected.

• The productivity of the rangeland ecosystems can be improved by better land use systems and planning.

•There is a need for identification & specialisation of rangelands (for investment, livestock keeping, crop cultivation, natural resources rehabilitation).

•Livestock routes need to be identified, mapped and protected including where appropriate through policy and legislation.

•Infrastructure (such as markets) that support livestock routes and mobility along them should be developed.

•Communal grazing lands including dry season grazing areas need to be identified (mapped) and protected.

•Policies must be responsive to the problems, needs and priorities of the local people so that they can be easily adopted by the beneficiaries.

•The capacity of local people and other actors needs to be built so that they can sustainably manage & protect livestock routes.

•Networks of different actors working in livestock routes protection (such as government organisations, NGOs, CBOs, and research organisations) should be developed.

2. Improved livestock market chain development

•Market arrangements that facilitate a more formal legal marketing system should be developed.

•Cross-border trade should be facilitated e.g. by providing certificates to livestock and livestock owners to allow regular movements for trading purposes.

•Livestock insurance systems in the long-run can even out some of the variability in production and income that is otherwise experienced.

3. Knowledge management system and database

* The Government should take the initiative to have a database at national and regional level to facilitate research, training and development on livestock routes protection.

* Maps of livestock routes can also be stored in such a database and used for such as land use planning purposes.

CLOSURE OF THE MEETING

The meeting closed with final words from Getachew Gebru thanking the participants for their contribution, and giving commitment to sharing the outcomes of the meeting and presenting them to the Pastoral Directorate and His Exc. Gebrezhiabher Gebreyohannes.

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The Rangeland Management Platform also has a dedicated email, which is checked intermittently: rangelandmanagementplatform@gmail.com

Appendix 1

MINISTRY OF AGRICULTURE, STATE MINISTRY OF LIVESTOCK DEVELOPMENT SECTOR, PASTORAL LIVESTOCK DEVELOPMENT DIRECTORATE

AGENDA

"THE IMPORTANCE OF LIVESTOCK ROUTES FOR LOCAL, NATIONAL AND REGIONAL DEVELOPMENT: THEIR MAPPING, SERVICING AND PROTECTION."

An international meeting organised by the Rangeland Management Platform, Pastoral Livestock Development Directorate, State Ministry of Livestock Development Sector, Ministry of Agriculture, at Hiruy Hall, EIAR, 8th September 2015, Addis Ababa

Facilitator: Dr Getachew Gebru, ESAP/PaRFE

Supported by: ESAP/PaRFE, USAID-PRIME, ILRI, & Tufts University

Time	Session
9.00-9.15 am	**Welcome and opening remarks** His Exc. Gebrezhiabher Gebreyohannes, State Minister Livestock Development Sector, MoA, Ethiopia
9.15-9.30	**Introduction to the meeting and agenda** - Dr Daniel Temesgen (ESAP/PaRFE) and Fiona Flintan (ILRI/PRIME)
9.30-10.00am	**Mobility, Environmental Heterogeneity and Resilience of Pastoral Socio-ecological System** Dr Dawit Abebe Shiferaw, Tufts University, Addis Ababa
10.00-10.30 am	**The IGAD Regional Transhumance Protocol – Content and Implications for Regional Livestock Development** Dr Osman Babiker, Head, Social Economics, Policy and Marketing Development, IGAD Centre for Pastoral Areas and Livestock Development
10.30-11.00	**Coffee/tea**
11.00-11.30 am	**A national map on livestock routes in Tanzania – process and uses** Dr Maria Mashingo, Animal Scientist, Head, Research, Training and Extension Dept, Ministry of Livestock and Fisheries Development, Tanzania
11.30-12.00	**Mapping, servicing and protecting livestock routes in Sudan** Dr Yousif Mohammed Gesem Elbari, Livestock Economics and Planning

	Directorate, Ministry of Livestock, Fisheries and Rangelands Professor Hussein Sulieman, Director Department for Remote Sensing & GIS, Gedaref University and National Monitoring Coordinator/Consultant Tufts University
12.00-12.30 am	**The mapping of livestock routes for market development in northern Kenya** Dr Polly Ericksen, Programme Leader, Livestock Systems and Environment, ILRI
12.30-1.30 pm	**Lunch**
1.30-2.00 pm	**A study of livestock routes and livestock value chains for COMESA** Dr Amaha Kassahun, Ethiopian Institute for Agricultural Research
2.00-3.00pm	**PANEL ON LIVESTOCK ROUTES FOR EFFECTIVE AND RESILIENT LIVESTOCK PRODUCTION AND LAND USE IN ETHIOPIA**
	1. Highland-lowland linkages – understanding the Godantu system through mapping of livestock routes in Bale Mountains Eco-Region - Ato Chibssa Worku, CARE Ethiopia 2. Livestock movements in Borana as input to the development of IBLI (index-based livestock insurance) - Dr Masresha Taye, ILRI 3. Mapping and understanding livestock routes in Afar through remote sensing - Dr Kidane Giorgis, CIFOR and A. Seid Ali, ARPARI
3.00-3.30 pm	**Tea/Coffee**
3.30-4.45 pm	**Group reflection and discussion on implications for livestock routes in Ethiopia and ways forward**
4.45-5.00 pm	**Closing remarks**