# LIVES approach to market oriented livestock and irrigated crops development in Tigray, northern Ethiopia

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## 1. Introduction

The need for transformation of the extension services towards market oriented agriculture has been part of the Growth and Transformation Plan of the Ethiopian government. This transformation requires a continuous access to knowledge and skill development of the value chain actors and service providers. In Tigray, the LIVES project has addressed the capacity and knowledge management gaps by first creating clusters of target areas with comparable commodity niches. The cluster approach has been initiated and tested on the background that in a defined districts or peasant associations, there exist a huge variation in livestock and irrigated crops development potential. Clustering is simply defined as the concentration of a realized livestock and irrigated commodity niche which potentially contribute to the income of value chain actors, enhance learning and economies of scale (Galvez-Nogales, 2010).

## 2. Process of commodity cluster setting

Following a joint discussion with regional agricultural extension, researchers and decision makers, central and eastern zones of Tigray have been selected as intervention demonstration sites for market oriented livestock and irrigated crops commodity development (Fig. 1). Within the two zones, districts relative potential for livestock and irrigated crops development have been ranked based on their existing and future potential, and access to market and extension services. The 16 districts within the two zones have been clustered into high, medium, limited or no potential for dairy and irrigated vegetables value chain development. Seven districts have been selected as intervention demonstration districts and the rest as domain districts (Fig. 1).

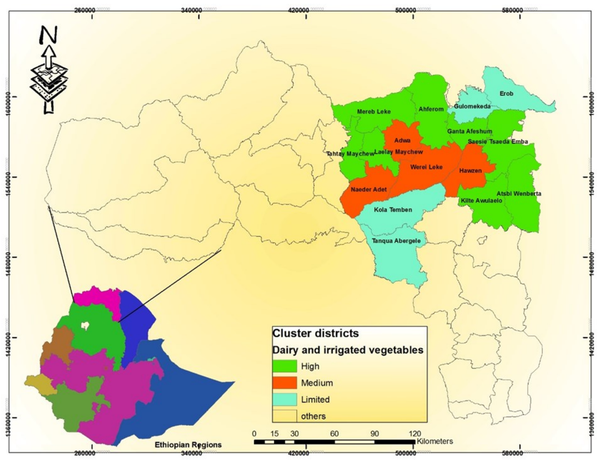


Fig. 1. Cluster of districts for dairy and irrigated vegetables value chain development interventions in central and eastern zones of Tigray, northern Ethiopia.

Similarly the 141 peasant associations (PAs) within the seven intervention districts were clustered as high, medium, limited or no potential for dairy and irrigated vegetables development (Fig. 2). About 3-5 PAs per intervention district has been classified as intervention PAs and the rest as domain PAs. About 10-25 households/PA selected as intervention units for demonstrating cluster of market oriented dairy and irrigated vegetables development interventions. In the cluster of intervention PAs and households, the LIVES project physically facilitated dairy and irrigated vegetables value chain development. The intervention PAs have been used to scale out demonstrated commodity intervention to domain PAs.

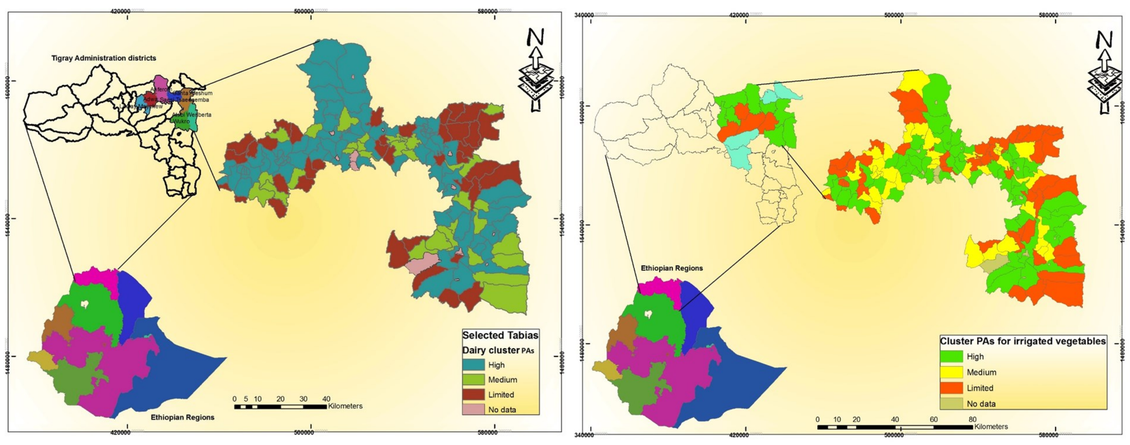


Fig. 2. Cluster of peasant associations (PAs) for dairy (left) and irrigated vegetables (right) value chain development in central and eastern zones of Tigray.

## 3. PA clustering and specific intervention needs

Of the total intervention and domain PAs (141 PAs), about 50% of the PAs was clustered as potential for dairy and 42% for irrigated vegetables, and the remaining as medium and limited potential (Fig. 3). The delineation of commodity based clustering of PAs imply that there is a cluster specific opportunities, constraints and interventions need of smallholders to improve dairy and irrigated vegetables value chain development. For instance, the relative potential of the PAs for dairy development have been helpful to popularized product oriented dairy systems– fluid milk development in the dairy high PAs, perhaps butter and heifer production in the medium and limited potential PAs. Moreover, the highly perishable irrigated vegetables including tomato and leafy vegetables have been popularized in the high potential PAs close to the local market whereas garlic and pepper in the medium and livestock feed in the limited potential PAs.

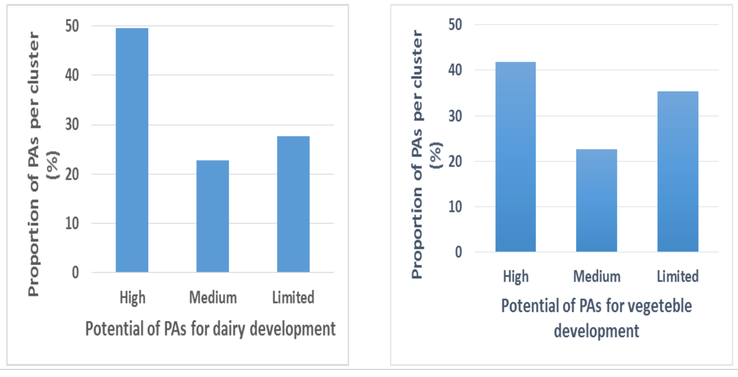


Fig. 3. Proportion (%) of peasant associations (PAs) for dairy (left) and irrigated vegetables (right) development potential in the intervention districts of Tigray.

## 4. Clustered dairy and irrigated vegetables value chain development

### Genetic improvement

Dairy genetic improvement has been at the forefront of the regional government's priority plan considering the huge demand for fluid milk in the local towns. To respond to this massive demand, IPMS (the predecessor of LIVES) , research and development partners begun oestrus synchronization and mass artificial insemination (OSMAI) works in the dairy high potential clustered PAs and targeting not more than 500 cows. OSMAI is now sustained as part of the agricultural extension work and led to a substantial increase in crossbred cows in the intervention and domain districts and PAs (Fig. 4). OSMAI will also be targeted for the medium and limited potential PA clusters for butter production .

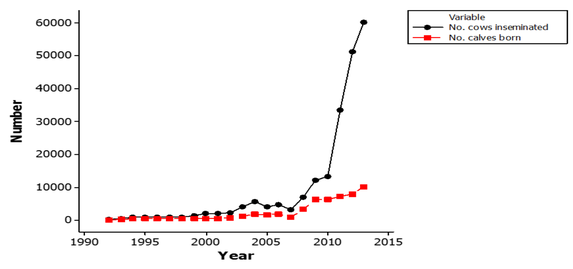


Fig. 4. Crossbred cows produced through regular AI and synchronization in Tigray.
(Source BoARD Annual report 2007)

### Milk processing and marketing

Promoting organized dairy cooperatives and linking them with milk shops triggers market for fluid milk in the high potential PAs. For instance, a 30-member dairy cooperative in Agula'a suburb managed to collect 10000-12000 liters of milk/month and earned 120000-144 000 Birr (Fig. 5). Focusing on milk selling shops and facilitating capacity development and market linkages pinpointed an increased likelihood of the marketability of fluid milk in bulk.

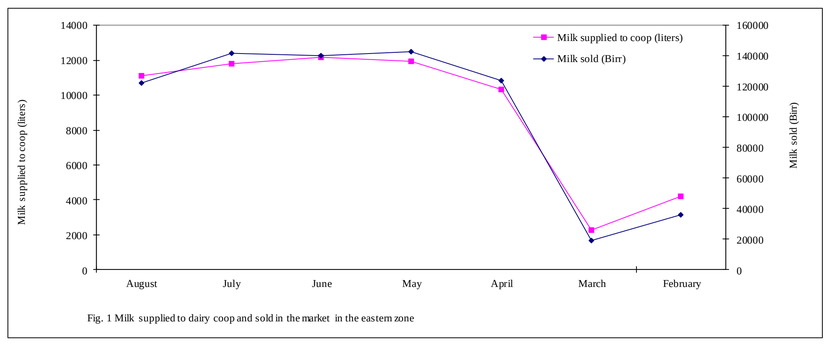


Fig. 1 Milk supplied to dairy coop and sold in the market in the eastern zone

Fig. 5. Milk supplied and sold by a dairy cooperative in Agula suburb, eastern Tigray.

### Pump maintenance services

Pump maintenance services were introduced through skill development of 17 movable service providers (MSP) and 35 front service providers (FSP) 25 irrigated schemes (Figs. 6 and 7). After 18 months, the number of pump owners supported by MSP increased by 83% in the intervention PAS and by three fold in the domain PAs (Fig. 8). Similarly, the number of pump owners supported by FSP increased by about 81% in the intervention PAs and by 14 fold in the domain PAs.
The results demonstrate that the introduction of cluster and intervention strategy in pump services positively effects then number of pump owners in intervention and domain PAs

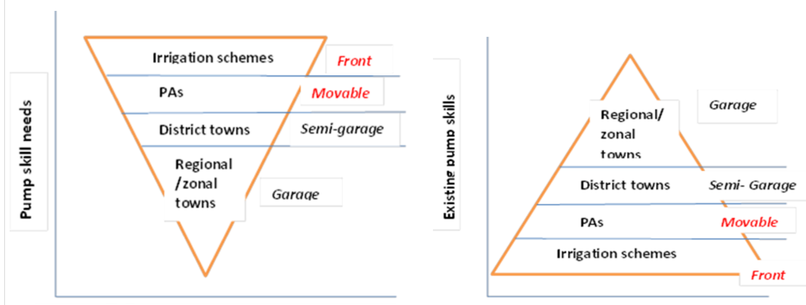


Fig. 6. Cluster of existing (left) and newly organized pump maintenance services set up in intervention peasant associations (PAs), central and eastern zones of Tigray.

Fig. 7. Clustered based training for movable (left) and front pump maintenance services providers in the intervention peasant associations (PAs), central and eastern zones of Tigray.

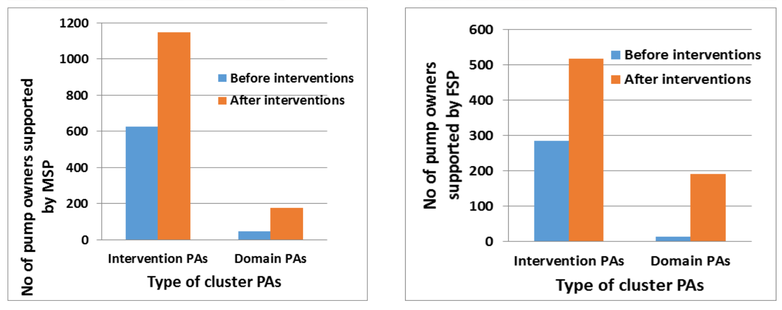


Fig. 8. Number of pump owners supported by movable service providers (MVS, left) and front service providers (FSP, right) in the intervention and domain PAs before and after the interventions, central and eastern zones of Tigray.

## 5. Lessons learned

- Defining intervention clusters based on the variation in relative potential of the realized commodity domains is useful to identify value chain development opportunities and prioritize interventions along the value chain nodes and context.
- Clustered commodity development domain is useful to speed up learning and sharing of skills and knowledge among value chain actors and extension service providers within the defined cluster. Knowledge and skill sharing found to be successful among neighboring farmers who have similar interest and potential in value chain commodity development.
- Clustering showed to enhance organized extension services, technology uptake and these most likely lead to concentrated access to input-output marketing.

## References

Galvez-Nogales, E. 2010. Agro-based clusters in developing countries: Staying competitive in a globalized economy. Agricultural Management, Marketing and Finance Occasional Paper No 25. FAO, Rome, 2010.



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