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).

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 have 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.

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 better and hence 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.

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 oestrous 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 crossbreed cows in the intervention and domain districts and PAs (Fig. 4). OSMAI will also be targeted for the medium and limited potential PAs clusters for butter production.

Fig. 4. Considered cows produced through regular AI and synchronization in Tigray.
(Source: BioAID Annual report 2007)

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Fig. 7. Cluster 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 (MSPs, 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.

Clustering showed to enhance organized extension services, technology uptake and these most likely lead to concentration of a realized livestock and irrigated commodity niche which potentially contribute to the income of value chain actors and service providers. In Tigray, the LIVES project has addressed 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).

References