Project Title: Suitability of GIR Cattle genetics in Enhancing the Dairy Value Chain at the Coastal lowland Tropics of Kenya.

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Summary: Milk volumes and market access are the two major bottlenecks in lowland dairy production at the Coast of Kenya. This research project aims at improving farmer livelihoods by providing dairy cattle genetics suitable for the utilisation in marketing strategies involving milk bulking and chilling. This strategy requires production of sufficient milk volumes throughout the year. The current challenge of dry season feeding of large breeds like the Friesian has led to the inability of farmers to maintain sufficient milk volumes. The current investigation earmarks the Gir cattle breed as a suitable animal for coastal lowland dairy production.

Introduction: Coastal lowland Kenya, in common with many similar areas of sub-Saharan Africa, has a large milk deficit yet has considerable potential to meet the unsatisfied demand. Through initiatives such the National Dairy Development Project (NDDP), the Kenya government has researched on identification and resolving of biological, social and economic constraints to the development, adoption and productivity of sustainable smallholder dairy systems (Thorpe et al., 2000). Most of the genetic resources used for the improvement of the Kenyan dairy cattle originate from temperate countries, where the production and market circumstances are overall different from those prevailing in Kenya. This unmatched production and market circumstances has adversely affected the sustainability of these breeds within the small-holder production system. This proposal seeks to explore GIR (Bos Indicus) as an alternative for lowland dairy production (Vercesi et al., 2010). Milk the “white Gold” from livestock could be produced in the arid and semi-arid low-lands to increase milk volumes that allows for milk bulking by farmers if the right genetics are applied. Milk bulking and chilling allows dairy farmers to have greater bargaining power in the dairy value chain.

Objective:
1. Assessment of GIR cattle potential for use in coastal lowland dairy production - Investigation of suitability of Gir cattle to farmer production goals and the production system,
2. Comparative assessment of milk production potential for GIR cattle in the tropics - Review of Gir dairy performance in comparison to other dairy breeds in the tropics in Kenya and Brazil,
3. Evaluation of alternative breeding schemes based on pure-bred GIR cattle and selected crosses - Development of a sustainable breeding programme based on Gir cattle and crosses of Gir
4. Adaptation of Gir cattle to coastal lowland climate in Kenya - to access the potency of Gir genetics for dairy production at the Coast of Kenya with respect to survival and reproduction
5. Design of a Business Model for sustainable enterprise in Livestock genetics improvement and dissemination

Research questions:
1. Are Gir genetics able to match production goals within the Coastal Kenya production system?
2. Are Gir cattle comparable to other dairy cattle breeds in milk performance in the lowland tropics? 3. What is the genetic and economic potential of breeding programmes utilising Gir genetics in Kenya and Brazil?
4. Can the Gir cattle survive in Coastal lowland production system in sub-Sahara Africa?
5. Can appropriate business models result in sustainable enterprise to support Gir cattle breeding programmes?
Dairy farmers have inequitable share of profits from the milk value chain because of inability to consistently maintain milk production all year round and collectively market milk due to low milk volumes. The low milk volumes are attributable to difficulties in dry season feeding of larger European breeds with high input demands in low-input small-holder production systems also utilisation of small dual purpose local zebu breeds for dairy production. Utilisation of Gir zebu cattle could enhance profitability of the dairy enterprise in the sub-Saharan tropics.