Global agriculture is at its critical point in the history of humanity. With the world currently at 1°C warmer than pre-industrial levels and projections to reach 1.5°C by 2030, there is a call for urgent actions. Within this context, livestock must be part of the climate smart agriculture and used to create solutions to mitigation and adaptation to climate change. In addition, livestock development is a key contributor for the delivery of the United Nations Sustainable Development Goals. However, tropical livestock production systems are currently the least productive. The low level of productivity is attributable to a range of factors primarily associated with limited genetic improvement. Our work is focused on the development and application of innovative tools, systems and capacities to contribute to sustainable and resilient livestock-driven food systems in Africa and other Low and middle income countries (LMICs).