**Robust dry matter intake estimation from feed & animal data**

**Keywords:** dry matter intake, large ruminants, cattle, methane, feeding characteristics, bodyweight, IPCC, Africa

**Brief project outline:**

Accurate estimation of dry matter intake (DMI) is the foundation for quantifying enteric methane emissions under IPCC protocols. The IPCC approach relies on activity data combined with generalised intake equations largely derived from temperate dairy and beef systems (e.g. Europe, North America, New Zealand). However, recent evidence shows that these equations can deviate by up to **20%** when applied to African livestock systems, where breeds, feed resources, and management conditions differ markedly.

This project will address this gap by developing DMI prediction equations for large ruminants in African livestock systems. This project will extend a pre-existing database of DMI and other experimental data collected by CIAT in the ERA ([Evidence for Resilient Agriculture)](https://alliancebioversityciat.org/publications-data/evidence-resilient-agriculture-era-livestock-data#:~:text=The%20dataset%20geolocates%20experimental%20sites,and%20yield%20and%20production%20outcomes.) database to derive DMI equations appropriate African cattle systems. The early career scientist will:

(1) Expand the existing database of DMI measurement experiments by screening & extracting data from additional published studies, (2) Estimate best-fitting regression equations (linear or non-linear regression combined with mixed effect regression) for DMI.

The work will be desk-based, using R statistical software and Windows-based applications (*e.g*. Excel).

**Desired technical skills:**

● Background in animal sciences (ruminant nutrition or physiology). ● Solid knowledge of statistics, including commonly used regression techniques ● Experience in R statistical software (preferred)

Main supervisor:

Dr. James Hawkins, Postdoctoral Research Fellow, ILRI (Livestock, Climate, and Environment)

Contributing supervisors:

Dr. Claudia Arndt, Senior Scientist, ILRI (Livestock, Climate, and Environment)

Dr. Peter Steward, Scientist, Alliance Bioversity CIAT

**Host institution:** International Livestock Research Institute (ILRI), Nairobi, Kenya.

**Start and end month of research stay:** February to July 2024

**Languages available at the host institution:** English.