Estimation of scenarios for greenhouse gas emissions in the meat and milk industry to reduce

Climate Change

Introduction

Meat and milk industry **7 billion** tons of CO2eq.

Represents **11%** of the global anthropogenic emissions

FAO (2022)

By 2050 demand increase **double** in developing countries

increase **10%** in developed countries

FAO (2018)
Yitbarek, M. B. (2019).

Global methane pledge with **+100** countries

Reduce **−30%** of methane emissions by 2030

CCAC (2023)

Methodology

The Food and Agriculture Organization (FAO) has developed the Global Livestock Environmental Assessment Model (GLEAM), a computational model based on the Intergovernmental Panel on Climate Change (IPCC) guidelines. It uses spatial data to estimate greenhouse gasses emissions from livestock systems

monitoring

reporting

verification

1. Integration with global data on feed production and trade – FAOSTAT– the global GHG impact of different scenarios of mitigation actions, such as substitutions of different feed ingredients over a range of time. 2. adapt and test GLEAM to work at a farm level. 3. Uncertainty analysis of GLEAM will be conducted, using Monte Carlo simulations to determine the spread of errors due uncertainties in the model and the data. 4.Sensitivity analysis to determine, through modelling, the uncertainty associated with each of the individual input parameters.
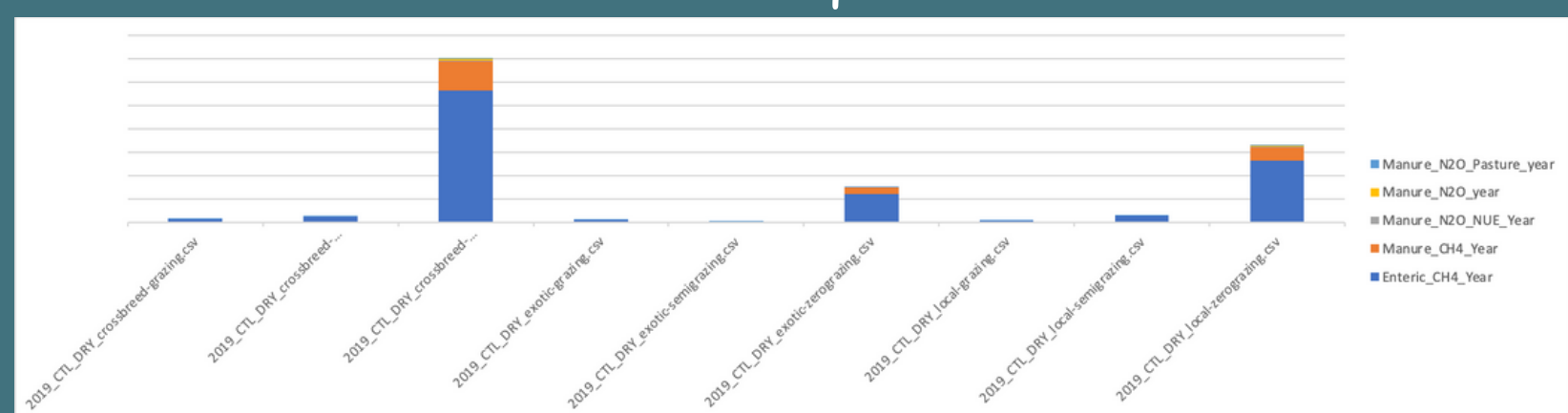
Results and Future work

Global

Global estimations using the new model were compared with the last version of GLEAM 3.0 – The implementation of a new methodology to estimate energy requirements has a direct impact on the dry matter intake, showing differences in results.

Reduce processing times **days – minutes**

Global Grid 1km to **store spatial data**

Run scenarios **data quality**

Web apps Implementation for data acquisition

Mitigation scenarios

Uncertainty of the results and from data acquisition

Rwanda

Rwanda estimations for cattle were calculated using new production systems and a new data set acquired in 2023

Uncertainty estimation of scenarios for greenhouse gas mitigation in the meat and milk industry
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