Capturing Effects of Diet on Emissions from Ruminant Systems

ERAGAS project

October 2017 till November 2020

9 eligible partners; various supporting partners

Total 3-year budget € 3.527.000, -

Building on & strong alliance with the FACCE-JPI Global Network project & the GRA through the FNN (A. Hristov)

FACCE ERA-GAS

MONITORING & MITIGATION OF GREENHOUSE GASES FROM AGRI- AND SILVI-CULTURE

Capturing Effects of Diet on Emissions from Ruminant Systems

9 partners

France

Germany

Denmark

United Kingdom

Netherlands

Finland

Sweden

New Zealand

Ireland

FACCE ERA-GAS

MONITORING & MITIGATION OF GREENHOUSE GASES FROM AGRI- AND SILVI-CULTURE

Objectives CEDERS

Main objective: delineate dietary effects on on-farm GHG sources and their trade-offs, at farm and national scales

Specific aims:

(1) develop, expand, refine databases to evaluate dietary mitigation strategies on digestion, excretion and related GHG emissions

(2) fill, by experimentation, high-priority knowledge gaps on dietary effects on ruminant and manure emissions

(3) evaluate, using well-monitored farm cases, in a modelling platform to determine consequences of dietary measures on total farm GHG emissions

(4) improve farm accounting and national inventory methodologies to capture effects dietary measures

(5) disseminate implications of findings to end-users of GHG accounting

CEDERS extends to

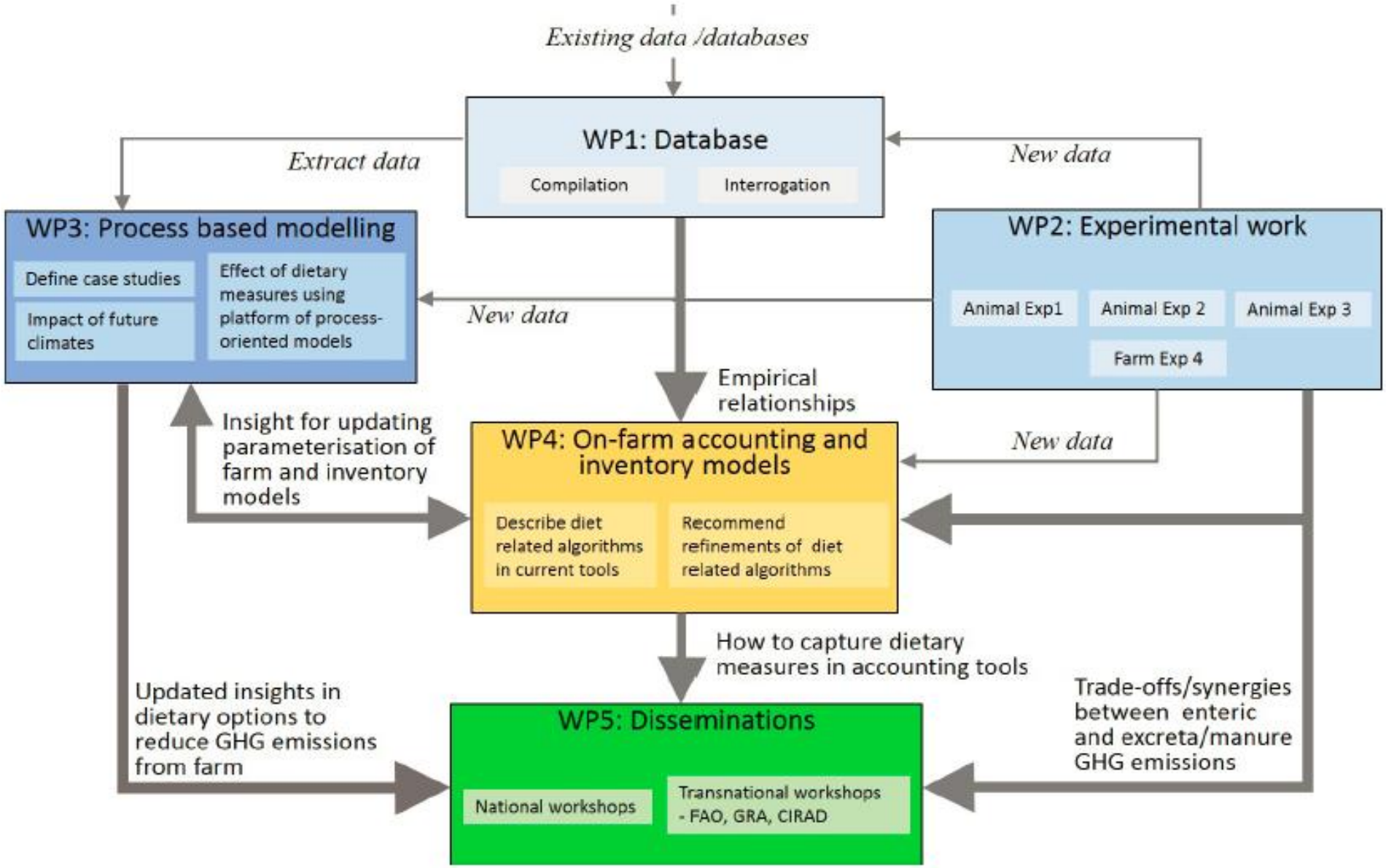
Main objective:

Delineate dietary effects on various on-farm GHG sources and their trade-offs, at the farm and national scales

CEDERS's activities will extend to other countries participating in the GLOBAL NETWORK project, the FNN & MMN as part of the GRA, the FAO and CIRAD

These relationships aid CEDERS to fill knowledge gaps for future GHG research priorities and inventory and reporting, to governments, non-governmental and advisory/extension organisations and the ruminant livestock sector

Outline CEDERS



Overview of Work Packages and their interaction in the CEDERS project

Expected CEDERS results

- Empirical evidence of trade-offs related to animal, excreta/manure and soil related GHG emissions
- Realistic GHG emission projections by applying detailed process-based models with well-monitored farm cases to allow well enough constraining of these models
- Relationships of dietary factors and whole farm GHG profile
- Refined insights in on-farm GHG emissions and consequences for farm- and country-specific methodologies of GHG accounting
- End-user specific recommendations for on-farm accounting tools and national GHG inventory methods
- Guidelines for non-partner countries seeking collaboration
- Project conducted in conjunction with FNN, GLOBAL NETWORK & national GHG platforms

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More information

www.eragas.eu/research-projects/ceders

or

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MONITORING & MITIGATION OF GREENHOUSE GASES FROM AGRI- AND SILVI-CULTURE

Enteric Fermentation Flagship

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

12 December 2017

Project: Improved quantification of the effects of feed and nutrition on enteric methane emissions from cattle managed under a wide range of production conditions and environments (FEED/METHANE RELATIONSHIPS)

Leader: LRG Feed & Nutrition Network coordinator (A. Hristov, USA); ERAGAS CEDERS project leader (A. Bannink, Netherlands)

Countries involved: All GRA countries

LIVESTOCK RESEARCH
WAGENINGEN UR

Enteric Flagship

GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES

- **Specific objectives:**
- (1) Expand animal and feed databases for mitigation of enteric methane developed by the GLOBAL NETWORK project to include new data representing production systems and environments from specific regions (focusing on **Southeast Asia and South America**), including systems and systems relying on by-products for feed;
- (2) Using these expanded databases, identify and recommend methane mitigation technologies that are practical and feasible for the livestock production systems in the target geographic regions and production systems;
- (3) Develop specific methane yield (Y_m) values suitable for local feeds in the target regions and production systems, which will enable the use of these new Y_m values to improve national greenhouse gas inventories;
- (4) Identify how nutritional measures can be captured in national greenhouse gas inventory methodologies to demonstrate mitigation in the target regions. The scope of work could be expanded (including additional geographic regions), if additional funding becomes available.

Enteric Flagship

GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES

- **A network of collaborators from the target regions representing diverse ruminant production systems will be developed**.

- **Outputs:**
- (1) At least two publications in international peer-reviewed scientific journals, one describing new information on feed/methane relationships in the target regions and Y_m factors, as well as one detailing opportunities for feed-based mitigation options in the target regions based on revised Y_m factors and other relevant considerations (economics, climate, feed availability, farming system);
- (2) At least two presentations at relevant international/regional conferences;
- (3) Final project report summarizing the achievements of this project.

- **Outcomes:** Improved methane prediction algorithms and information to support improved national methane and greenhouse gas inventories in the target regions. Quantified feed mitigation options will be developed for the target regions, suitable for a range of systems based on comprehensive data.