FACCE-JPI is the **Joint Programming Initiative on "Agriculture, Food security and Climate change"**. It brings together 21 European and associated countries to coordinate their research capacities to address the vital challenge of ensuring sufficient production of food, as well as feed, fibres and bio-fuels, in the context of demographic growth and a changing climate.

The Multi-partner Call on Agricultural Greenhouse Gas Research, initiated by FACCE-JPI with the American National Institute of Food and Agriculture of the USDA, New Zealand's Ministry for Primary Industries and Agriculture and Agri-Food, Canada aims to bring together excellent research consortia to enhance international collaboration in the face of the global issue of climate change mitigation.

In the frame of this call, the following project has been recommended for funding:

Basic Data

Title	**GLOBAL NETWORK FOR THE DEVELOPMENT AND MAINTENANCE OF NUTRITION-RELATED STRATEGIES FOR MITIGATION OF METHANE AND NITROUS OXIDE EMISSIONS FROM RUMINANT LIVESTOCK**
Acronym	**GLOBAL NETWORK**
Theme	Study of mitigation options at the field, animal and manure management scales with quantification of their technical potential for a range of agricultural systems and regions
Topic	Greenhouse gas emissions in the agriculture sector arising from agricultural soils including crops and grasslands, domestic livestock and waste management systems
Duration	01.03.2014 – 28.02.2018
Total cost (in €)	1 296 876€
Requested funding (in €)	490 120€

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Organisation Name	**MAA JA ELINTARVIKETALOUDEN TUTKIMUSKESKUS**
Country	Finland

Organisation Name	**TEAGASC - AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY**
Country	Ireland

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Summary

Ruminant husbandry is a major source of anthropogenic greenhouse gases (**GHG**). There is a large body of nutrition-related GHG and ammonia (**NH_3**) mitigation data. These data, however, are not well organized. The GLOBAL NETWORK we propose herein will accumulate, analyze, and systematize these existing resources. The goals of this project are to: (1) Create, update, and expand animal and feed databases for mitigation of enteric methane (**CH_4**); (2) Gain understanding of the contribution of genetic and microbial factors to variation in enteric CH_4 production, digestion, and nutrient utilization; (3) Validate markers of enteric methanogenesis for the development and monitoring of CH_4 mitigation strategies in ruminants; (4) Create, update, and expand a database of mitigation strategies aimed at improving dietary N utilization and lowering N excretion and NH_3 and nitrous oxide (**N_2O**) emissions from manure; (5) Develop Standard Operating Procedures (**SOP**) and guidelines for conducting and assessing data from in vitro and in vivo studies designed to evaluate nutritional strategies for mitigation of CH_4, NH_3, and N_2O emissions; (6) Develop new and evaluate existing models for predicting CH_4 emission and N excretions under various nutritional, animal, and farm management scenarios; and (7) Identify and recommend CH_4, NH_3, and N_2O mitigation technologies that are practical and feasible for the specific conditions of livestock production systems in the consortium countries. These activities will be integrated with the activities of the “Network and Database on Feed and Nutrition in Relation to Greenhouse Gas Emissions” (**FNN**, currently with 23 member-countries). The research we propose will go beyond developing and maintaining an enteric CH_4 mitigation database to also include dietary manipulations to reduce N excretion by the animal, which will mitigate NH_3 and N_2O emissions from manure storage or land application/deposition. Our multinational team of FNN member countries will assess the performance and relevance of various quantification protocols and SOP developed to calculate emission reduction potential of mitigation strategies for enteric CH_4 and N excretion. Intensive research will be conducted to understand genetic and microbial factors contributing to variability in CH_4 production and to validate markers of enteric methanogenesis. Based on the mitigation databases, the team will develop, improve, and evaluate models for predicting CH_4 production under various dietary, animal, and farm management conditions and also the impact of diet on excreta composition as related to NH_3 and N_2O emissions from manure. The proposed GLOBAL NETWORK will fill important knowledge gaps and provide the much needed expert recommendations for future research priorities, methodologies and science-based GHG mitigation solutions to government and non-governmental organizations, advisory/extension networks, and the ruminant livestock sector.