

## **Animal Health and Greenhouse Gas Emissions**

**Investigating the possible links and synergies between efforts to reduce animal disease and reducing emissions intensity; proposal for establishment of a research network on Animal Health and Greenhouse Gas Emissions Intensity**

**Submitted by the UK**

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## **Executive Summary**

This paper proposes establishment of a global research network under the LRG to explore the synergies between efforts to reduce animal disease and reducing greenhouse gas emissions intensity.

It is widely acknowledged that there is a dearth of published studies looking specifically at the link between animal health status and greenhouse gas emissions intensity, although some synergies with production loss / efficiency / feed conversion research would prove useful. There are significant bodies of ongoing research in the fields of animal health and in GHGe. Facilitating links and synergies between the two could be particularly beneficial.

A workshop funded by the UK Department for the Environment, Food and Rural Affairs (Defra) was held in Bangkok in June 2012. The workshop aims were to scope interest in the topic, exchange knowledge, identify evidence gaps and priority actions and scope options from promoting the issue, including Network partners to engage with. Identification of appropriate disease prevalence and sector/system distribution data-sets and the ability to map the benefits of disease interventions will be amongst the first challenges to tackle.

The main conclusion of the workshop was that a well-scoped and well-connected Network would be of considerable value in light of the fact that this is an emerging concept with significant scope for development. The UK is offering to lead the network in its inception.

## **Establishing the Animal Health and GHGe Network**

### **Background**

The disease burden on livestock is acknowledged to result in a production efficiency losses of up to 20%, although the contribution of specific diseases and conditions to efficiency losses are not well documented. There is a broad consensus amongst experts and stakeholders that the greenhouse gas emissions intensity (GHGe) from livestock farming could be reduced through efficiency and production gains resulting from improved livestock health.

Discussions at the LRG Meeting in Amsterdam, November 2011, highlighted the potential to investigate links and synergies between efforts to reduce the burden of disease on livestock and reducing GHGe intensity under the Alliance. This was recorded as an action within the Group's work plan and the UK was invited to lead the proposal. A scoping workshop was then held in Bangkok in June 2012 to which all LRG member countries were invited. This workshop was held in coordination with meetings of the Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses (STAR-IDAZ) and STAR-IDAZ members were also invited to participate.

While there is a long history of research in the field of animal health, the conceptual link between animal health and greenhouse gas emissions is novel and so there is a real opportunity for interested researchers to collaborate and for research funders to

coordinate their efforts. Improving animal health status while reducing emissions intensity offers a major win-win opportunity across a diversity of countries and could help some organisations that are mainly active in the area of development aid to engage in this area with significant benefits to mitigation outcomes. This could result in globally joined-up programmes of research, benefitting member countries in terms of shared research approaches and outputs, and value for money where co-funding opportunities are identified.

A formal network would provide a forum for research programme managers and funders to share information on activities relating to animal health and GHGe, and identify synergies and common themes in research needs and knowledge gaps.

### **Scope of the Network**

The network would consider all major groups of animals produced for food and how their health is related to GHGe intensity. As appropriate, there would also be scrutiny of animal health interventions and their link to productivity and GHGe.

In the first instance the Network would provide a discussion forum to exchange information about on-going activities, identify relevant data-sets and forge relationships.

Any activities should not happen in isolation. Connections with other networks and organisations with related activities will be crucial. It will be critical to take a global approach and embrace the related diversity.

The Network should retain an awareness of national and regional development agendas and other approaches to influence GHGe from livestock systems to ensure synergies are fully recognised and where appropriate, exploited.

### **Network Development**

Interested Alliance member country representatives and other relevant experts and institutions can be participants in the Animal Health and GHGe Network. A chair person or network member will be delegated to develop a collectively agreed work plan and strategy for the network, coordinate proceedings and report back to the Alliance. The UK Government have allocated provision for UK leaders and scientists to report on progress at LRG meetings.

Operational Procedures of the network will be decided by the network and will be described in a collectively agreed work plan and strategy. Specialist focus-groups may be established, whenever needed, to address issues which require a particular level of expertise, producing recommendations for consideration by the network.

### **Objectives and Benefits of the Network**

1. To share information on current and planned funding activities in the field of animal health and GHGe, so as to avoid duplication of effort, identify gaps and help focus research efforts on:
  - Improved understanding of the links between animal health and GHGe and productivity across different livestock production systems;

- Improved understanding of the costs and direct and co-benefits of animal health interventions that might lead to a reduction in GHGe intensity;
  - Better animal health data management and coordination in order to facilitate consistent and meaningful research into the links between animal health and GHGe and productivity;
  - Identifying opportunities for livestock industries, development agencies, governments and NGOs to engage in a shared agenda to improve animal health status and productivity while reducing GHGe intensity from livestock systems.
2. Maintain and enhance capacity in this field of research, including the ability of practitioners from the GHGe and animal health fields to interact.
  3. Encourage and facilitate a joined-up approach from fundamental science to strategic and applied research and research-into-use while avoiding overlaps and identifying gaps and opportunities for collaboration.
  4. Establish common agreement on priority issues and explore funding opportunities to address them, including links with more traditional animal health and agricultural and rural development programmes.
  5. Wherever possible, to pursue synergies with stakeholders, including STAR-IDAZ (Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses), OIE, FAO, World Bank, rural development organisations etc in order to further strengthen global cooperation and networks.

### **Value of the Work**

Formation of a network on animal health and GHGe within the LRG of the Alliance is appropriate and important for the following reasons:

1. Initiatives led by this network will identify ways of reducing GHGe through improving animal health, which fit well within the remit of the Alliance. This work would offer multiple win-win opportunities, including potentially improving food security and increasing the resilience of food production systems while reducing GHGe intensity of livestock systems.
2. This network has the potential for immediate impact due to its strong emphasis on education and extension of good practice in the field of animal health, and because, unlike other fields of GHG research, there are existing drivers and major co-benefits that are independent of climate policy for farmers and other actors to be motivated to improve animal health.
3. The Alliance contains motivated countries that are already working together and so there will be a platform for engaging with the animal health community.
  - Those countries involved in the Alliance have significant livestock production systems and thus would likely benefit from the dual benefit of reducing GHGe intensity through animal health management.

- The working relationships that have already developed will provide a platform for the formation and development of this network and it will be important to forge relationships with the animal health community.

The Alliance can facilitate links between animal health and disease communities and GHG research communities so that evidence gaps can be identified by the experts, but also so that priorities identified by the network can be communicated to those communities for consideration in their research, and to policy makers, research funders and donors within the agriculture, health, and climate change field.

## **Coordination and facilitation of the research conducted and Information sharing within the Network**

### **Contributors and Network Partners**

Member countries of the Alliance and all relevant experts and organisations will be invited to participate. It is not known at this stage which member countries will be interested in actively participating or leading, although the UK has agreed to take a leading role in the inception of the network.

Partner organisations, networks and discussion fora will be critical for the success of the Network. The global STAR IDAZ network brings together researchers and funders with the overall aim of improving coordination of research activities on the major infectious diseases of livestock so as to hasten the delivery of improved control methods. Forging a strong relationship and co-ordinating activities with this pre-existing network would provide a quick win for the proposed animal health and GHGe network. STAR-IDAZ involves participants from across the globe with additional players involved in regional networks for the Americas and Asia and Australasia. Plans are also being developed for the establishment of an African Regional network. It is proposed that STAR-IDAZ would be an operational partner providing secretariat support and a focus for the Network meetings. STAR-IDAZ is already establishing a working group on the related topic of Alternatives to Antibiotics in livestock production. There will be considerable benefit by ensuring that this proposed network maintains a close association with other networks operating within the LRG. The FAO and OIE are already engaged with the proposed Network and active in a range of activities of likely relevance to the network.

Other organisations identified to engage with include the following:

- a) JPI FACCE is currently considering and is likely to be willing to publish a call that would focus on animal health and GHGe.
- b) The FAO and a number of its activities and units, including FAO Global Agenda of Action, which relates to reducing emissions from livestock by closing the productivity gap, preserving and improving pastureland, and zero discharge in terms of waste management. FAO APHCA – Animal Production and Health Commission for Asia and the Pacific.
- c) The Agriculture, Food Security and Climate Change Programme.

- d) Asian Working Group for Livestock (also in the process of setting up a centre for animal health and zoonoses).
- e) The International Livestock Research Unit (ILRI).

## Ongoing Activities

Participants at the Bangkok workshop had the opportunity to identify their ongoing activities and comment on the gaps they see and this is presented in Annex 1.

## Evidence Gaps

The principle evidence gaps identified during the workshop are described below.

- a) Data sources such as disease prevalence are likely to prove one of the biggest hurdles in quantifying the potential synergies between animal health and GHGe and designing the most effective intervention strategies. A key task for the network will be to identify ways of collecting, storing and analysing to make them comparable on a regional, national and international level.
- b) Best animal health management practices are in many cases well documented, so understanding optimal knowledge transfer strategies and the barriers to uptake are critical.
- c) The complexity of interactions is an area that requires significant analytical development. For example, where several diseases/conditions are present and several health interventions could be used, each of which has an impact beyond the disease/condition it is intended to target.
- d) Understanding the other drivers for interventions to animal health, particularly in relation to endemic disease. Examples include animal welfare and public health, and how they could influence GHGe profiles from different livestock systems.
- e) Identification of regional differences. It was also noted that we should ensure that extensive systems are fully valued in terms of the wider society, ecosystems and even financial services that they provide, including rural livelihoods and development, and resilience of food systems.
- f) Identification of sector and systems differences; what is the relative impact of livestock health and the relative impact that health interventions could have in each sector or system. In many cases, even basic analyses have not been conducted to provide a picture of the relative impact that animal health has on GHGe, making this one of the most important gaps.
- g) Genetics and genomics; identification of selection traits to reduce GHGe from livestock, disease resistance, increased productivity. This should always be balanced with maintaining breeds that are geographically adapted.
- h) The effect of health on productive life, for example, the relative merit of life-time production vs. focus on maximising production from single lactations.

This general issue could lead to the development of a set of universal health indices.

### **Priority Actions**

The over-arching issues identified were those of the relative impact that livestock health has on GHGe and the regional reality of being able to tackle livestock health issues. It was also noted that the issue will only be developed through multi-disciplinary research. Priority actions were brigaded into six sections:

- a) Identify relevant data-sets such as disease prevalence and ways of collecting, storing and analysing data to make them comparable on a regional, national and international level. The EU INSPIRE Geoportal will be a valuable partner to engage with in this action.
- b) Analysis of the impact of disease challenge in each sector e.g. beef cattle, poultry, as well as analysis in each system e.g. organic, free-range, conventional.
- c) Identification and characterisation of disease mitigation methods and their effect on production efficiency and GHGe intensity.
- d) Building futures scenarios into analyses to inform policy options.
- e) The role of genetics and selection criteria in disease resistance.