



From diversity to strategy

Livestock research for effective policy in a climate change world

This policy brief sets out practical ways in which the diversity of livestock systems research can be further integrated to tackle the challenges of sustainability and food security under climate change. It was produced by FACCE MACSUR, a knowledge hub set up to improve capacity in agricultural modelling in the context of climate change.

Summary

European livestock agriculture is extraordinarily diverse, and so are the challenges it faces. This diversity has contributed to the development of a fragmented set of research communities. As a result, livestock research is often under-represented at policy level, despite its high relevance for the environment and food security.

Understanding livestock systems and how they can sustainably adapt to global change requires inputs across research areas, including grasslands, nutrition, health, welfare and ecology. It also requires experimental researchers, modellers and stakeholders to work closely together.

- Networks and capacity building structures are vital to enable livestock research to meet the challenges of climate change. They need to maintain shared resources and provide non-competitive arenas to share and synthesize results for policy support.
- Long term strategic investment is needed to support such structures. Their leadership requires very different skills to those effective in scientific project coordination.

Joined-up climate change research

Climate change is already altering the environment in which animals are farmed, affecting almost every aspect of farming, from feed availability, quality and prices to pathogen burden. The need for inter-disciplinary research to address this challenge is widely recognised. Knowledge hubs and similar initiatives attempt to deliver such “joined-up” research. Lessons can be learnt from their early implementation. Here, experiences from the livestock and grassland modelling theme (LiveM) of the pilot FACCE-JPI knowledge hub MACSUR are presented.

Networking: achievements and challenges

MACSUR involves more than 70 research institutes from across Europe. LiveM represents 30 institutes from 14 countries. The theme includes many types of researcher, from scientists modelling plant growth, to those modelling changes in parasite infections. This wide range of viewpoints presents big opportunities to share and evaluate solutions to climate change related problems. However, experience in MACSUR also highlights the costs and barriers to collaboration between disciplines:

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- Discussions with partners reveal enthusiasm for networking and capacity building. But they also reveal a lack of time and resources for these activities. Currently, competing institutes put pressure on researchers to focus on publishing within their discipline. Networking is an 'extra' often receiving little or no funding. Within MACSUR, many partners contribute voluntarily, and as a result their inputs understandably stay limited.
- Researchers collaborate more with people they already know. So smaller institutes may struggle to engage with new networks and initiatives. As a result, novel approaches and considerable expertise may remain side-lined.
- Researchers are in competition with each other for funding and for recognition of their research topic. Research institutes compete for funds and prestige.

In the business world, it has long been recognised that competitors benefit from working together in some cases, while competing in others. But collaborative initiatives rely on trust. Trust is enhanced in networks through coordination by people and institutes that are not biased towards any particular group or approach, who are skilled at facilitating interactions, and who are respected by the partners. The benefits of such networks are long term (as shared resources develop, and trust and understanding grow).

Livestock and grassland modellers have identified the need for shared resources like inventories of models and data, the development of flexible modelling platforms, and the sharing of ideas in workshops and conferences. Despite the challenges described, LiveM has begun to bring together the wide range of researchers it represents (**Box 1**).

Box 1: The knowledge hub role: Horizon scanning in LiveM

In 2015, two workshops identified research priorities related to tackling climate change in:

- grassland modelling
- livestock health and pathogen modelling

Fifty experts representing 25 institutes from 14 countries were involved. Fifteen challenges for grassland modelling, and 20 challenges for health and pathogen modelling were identified.

For the first time for each of these fields, the needs of very diverse communities of researchers were presented together, highlighting opportunities for learning across research disciplines and nations.

The example shows how a knowledge hub can:

- use its wide membership to synthesize lessons learnt across many research projects
- show scientists where they fit as part of a wider research community
- raise awareness of the potential of approaches that are poorly understood outside the research community, such as mathematical modelling

What is needed?

Progress in LiveM is achieved by creating an open, non-competitive environment for co-working. Joint efforts are facilitated by non-modellers who are not in competition with the partners, and not biased towards any of the disciplines involved.

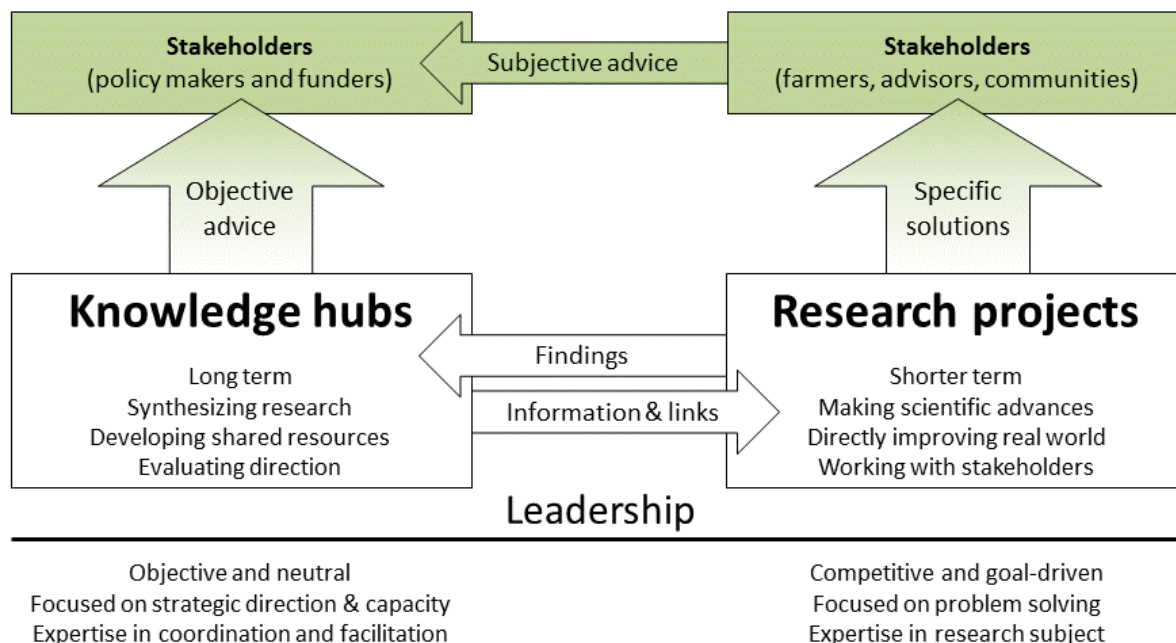


Fig. 1: The role of knowledge hubs & research projects, and the different leadership skills required for them

The role of inter-disciplinary initiatives and the requirements for their leadership are very different to the role and leadership requirements of projects within disciplines (**Fig. 1**). Within disciplines, incentives are often better aligned, and progress is easier to achieve. Crop modellers, for example, have made considerable and impressive advances in building capacity within their field. Professional ambitions for progress within the discipline closely align with the need for scientific advancement. Therefore, progress *across* disciplines requires most attention. But these different types of development are both needed to tackle the challenges faced by livestock agriculture.

Recommendations

- The environmental, social and economic importance of livestock systems makes it *essential that livestock systems research is better represented at policy level*
- To achieve this, *lasting networks and capacity building structures are needed*, to develop and maintain shared resources, and to present syntheses of current knowledge across research disciplines
- *Networks and capacity building structures require long term strategic investment* in order to be effective
- *Hubs and networks need to build trust*, and require leadership by people with expertise in facilitation and coordination, and without bias towards a particular approach, view or discipline
- *Hubs and networks must be inclusive*, with active support to involve smaller research groups