

# A view from the scientific chair of the BiodivERsA-FACCE JPI call

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# The call

## Promoting synergies and reducing trade-offs between food supply, biodiversity and ecosystem services

With two (connected) themes

- **Theme 1:** To what extent can biodiversity better support agro-ecosystems / agricultural production systems in terms of multi-functionality and outcomes in a global change context?
- **Theme 2:** Which policies and governance systems can promote the emergence and support of agro-ecosystems / agricultural production systems benefiting from and beneficial to biodiversity and ecosystem services?

As relevant and important a topic/theme as one could ask for in the European rural policy and research arenas

# The evaluation process

- Two key elements: (i) science quality and (ii) stakeholder engagement/communications
- Both needed to be of high quality to ensure funding
- There was a suggestion of the potential of inter-disciplinarity in the call
- Science quality often very good
- The requirement for stakeholder engagement was quite often more weakly responded to
  - Roles of stakeholders often ill specified
  - Forms of engagement were often limited
  - Too often stakeholders were passive recipients of project findings rather than co-producers of knowledge
  - Research needs properly designed engagement strategies

# A personal journey

- A university career for thirty + years which illustrated stereotypical inter-departmental rivalries
- An existence at boundaries
- Four years leadership in a university-based research unit: the Countryside and Community Research Unit in the University of Gloucestershire
- Six years science group leadership in the James Hutton Institute Aberdeen (a land use research institute with a strong interdisciplinary mission)
- Often little effective bridging between university departments
- RAE/REF metrics favoured narrow framings of science challenges
- Research institute allowed much more cross disciplinary thinking
- But beware of challenging some political paymasters-they want their problems solved not exposed
- Social science can sometimes be challenging for biological scientists
- The effort of inter-disciplinarity is worth it

# A bit of background to the topic

# Enhancing sustainability of food and fibre systems is at the heart of the call



- All three legs are needed to sustain the system
- Take one leg away and the stool falls over
- ...but some substitutability or trade-offs?
- There is a tendency for the natural scientists to neglect the socio-economic and the socio-economists to neglect the natural sciences

**The match to the new RDP is very close**

- Competitiveness
- Environment
- Territorial development/inclusion

# New framings of contemporary land use - environment scientific challenges

## Some more recent framings

- Sustainability science
- Resilience in socio-ecological systems
- Transition theory/management
- Ecosystem services

## What do they imply?

- A search for integrative and holistic approaches
- An exploration of stability/instability/resilience
- A need for linking science and practice in new ways
- A need for better ways to explore values/public goods

# The challenge ahead

- Link scientific research and practice more effectively- shifting from research pipelines to collaborative learning
- Realise the benefits of the European Innovation Partnership (EIP) on Agricultural Productivity and Sustainability and recognise the need for social innovation
- Retreat from silo-based thinking towards the embracing of complexity of socio-ecological systems
- Realise that ecosystem services thinking is not just repackaged old style ecocentrism
- Recognise the reality of differences over space (and scale issues) and the problematic nature of 'one-size-fits-all' fixes



# Back to the Biodiversa FACCE JPI Call

# A compelling case for inter-disciplinarity

- “Wicked” (multi-dimensional open ended no simple answer) ongoing problems demand more than single discipline answers
- There is a threat of Beddington’s Perfect Storm: food, energy and water shortages, temperature change, extreme events and how society can respond: A wicked problem?
- How real is this threat?
  - Significant evidence of compromised capacity to produce food
  - Climate change is happening and strongly connected to anthropogenic factors
  - Water problems are rife globally (Californian droughts, Australian floods, Baltic algal blooms)
  - Complex system dynamics make aggregate changes hard to predict, especially tipping points
  - Multiple policies push and pull in different directions and can exacerbate problems

# Some observations

- Arguably Beddington's thinking presages a shift towards recognition of need for a more bio-based economy as part of a necessary transition towards sustainability and a less compromised world ....
- ...but the nature, governance and shape of that sought after bio-based economy is highly contestable
  - Some accept the notion of a technocratic bio-economy (bio-substitution, the bio-refinery etc.) and seek to nurture it through policy
  - Others (e.g. Marsden) see an eco-economy perspective as closer to some core European values
- And it is not easy to achieve because there is pressure on the capacity to produce renewable natural resources
- And in the short term we can anticipate price volatility on food fibre and other raw materials

# A compelling case for greater stakeholder engagement

- Conventional trickle down from science to policy to practice has not always delivered desired outcomes/transformations
- Local knowledge sometimes confronts and challenges science recommendations (bottom up innovation matters)
- More holistic framings of impacts reveal different ways of valuing environment
- Trade offs need to be better understood, but cannot always be considered using a common denominator
- Stakeholders can either be engaged as action-researchers or as beneficiaries of more finely tuned outputs

# Some observations

- We need a clear understanding of the role of stakeholders in land-based sciences research
- Stakeholders include land managers, policy advisers and makers, the taxpaying public, local publics, the science community etc.
- That role will definitely vary from project to project and place to place
  - At one extreme stakeholders may be little more than a sounding board
  - At the other extreme stakeholders can be key actors and agents in the research process as in transdisciplinary approaches

# Assessing trade-offs between ecosystem services

- Making trade offs is not reducible to a single denominator such as £s or €s and creates a formidable measurement challenge
- There are complex challenges:
  - How to **value** complex (often non-market) services
  - How best to **deliver** complex bundles of services: Sparing vs sharing
  - How to **balance** local preferences vs non-local expert preferences and more generally how to **weight** preferences
  - How to **assess** distributional impacts
- It is very difficult to 'optimise' responses across diverse land use types and divergent farmer styles and behaviours
- These judgements require both normative and positive engagement by scientists, policy makers and practitioners

# Why this BiodivERsA-FACCE JPI initiative matters

- It addresses the need to explore grand societal challenges through multiple science lenses
- It recognises the additionality from looking at different problems in different contexts
- It helps strengthen European research capacity in the field
- It offers ten diverse research teams the chance to build some exemplary projects and to think reflexively about the new ways of doing science to address these grand challenges

# To conclude

- We have an excellent and diverse range of projects that we will now hear about
- They vary considerably in methodology and focus. As reviewers we welcome that diversity
- They focus on some key ecosystem services and their relationship to food production
- This kind of interdisciplinary science provides a crucial opportunity for building new scientific understanding and we should be grateful to the member states and European Commission for funding it