

BiodivERsA/FACCE-JPI Joint Workshop Preparing a joint vision and collaborative activities

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Background document

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1. Context

1.1 *Rationale for collaboration*

Links between agriculture and biodiversity are strong and bi-directional. Agricultural productivity and food security strongly depend on biodiversity and the ecosystem services it provides. Agricultural biodiversity at the genetic, species and ecosystem levels is also crucial for increasing adaptability and resilience of agricultural production systems in the face of climate change.

At the same time, agriculture have had a key role in determining the fate of biodiversity across Europe and worldwide, with positive effects of, e.g., traditional/extensive management of some areas and maintenance of local breeds, and negative effects mainly of intensive agricultural systems. According to the midterm review of the EU Biodiversity Strategy “*Overall, biodiversity loss and the degradation of ecosystem services in the EU have continued since the EU 2010 biodiversity baseline*” and “*the continuing decline in the status of species and habitats of EU interest associated with agriculture indicates that greater efforts need to be made to conserve and enhance biodiversity in these areas*”. Climate change is expected to further increase pressures on biodiversity and (agro)ecosystem services.

It is thus important to identify research priorities and actions to develop synergies and reduce trade-offs between food production, biodiversity and ecosystem services; to properly value biodiversity and ecosystem services across different agroecosystems; and to identify possible nature-based solutions for climate change adaptation and mitigation in agricultural landscapes.

1.2 *History of collaboration*

BiodivERsA and FACCE-JPI have collaborated successfully before, setting up a [pan-European call for international research proposals on “Promoting synergies and reducing trade-offs between food supply, biodiversity and ecosystem services”](#) in 2013-2014, which resulted in the funding of 10 trans-national research projects.

Box 1: 2013-2014 Joint call between BiodivERsA and FACCE-JPI

The BiodivERsA ERA-Net and the FACCE-JPI launched a [joint call](#) for research proposals on “Promoting synergies and reducing trade-offs between food supply, biodiversity and ecosystem services” in November 2013, with a closing date in mid-February 2014.

Fourteen EU Member States and Associated Countries (Austria, Bulgaria, Cyprus, France, Germany, Lithuania, The Netherlands, Norway, Portugal, Romania, Spain, Sweden, Switzerland and Turkey) participated in the call.

The call addressed the following topics/ questions:

T1: To what extent can biodiversity better support agro-ecosystems / agricultural production systems in terms of multi-functionality and outcomes in a global change context? The proposed research on this theme is expected to help developing innovative agricultural landscapes and systems delivering ecosystem services and preserving biodiversity, as well as to enhance biodiversity-based adaptation of agriculture to climate change and extreme events.

T2: 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? The expected impact of the research proposed in this theme is to gain knowledge and inform relevant actors for the support of agricultural production systems benefiting from and beneficial to biodiversity and ecosystem services. This includes defining how innovative governance and economic arrangements could reduce the barriers preventing the development of productive agro-ecosystems with high nature value.

10 transnational research projects were selected for funding for a total amount of 10.2M€.

A joint kick-off meeting was held in April 2015; and a brochure describing all the funded projects is available [here](#). The projects started in late 2014 / early 2015 and will be completed by mid/end 2018.

The FACCE-JPI Scientific and Stakeholder Advisory Boards have recently recommended to improve the balance of FACCE-JPI joint actions across the five Core Themes of the FACCE-JPI Strategic Research Agenda (SRA, v2016). Consequently, the FACCE-JPI Governing Board decided to explore the possibilities for a new initiative to cope with climate change-induced pressures on ecosystem services in agricultural landscapes, in the context of its Strategic Research Agenda Core Theme “Assessing and reducing trade-offs between food production, biodiversity and ecosystem services”, and to explore possible collaborations with BiodivERsA

Concurrently, the BiodivERsA General Assembly stated in its Strategic Research and Innovation Agenda (SRIA, 2017-2020) the need to collaborate with FACCE JPI to strengthen the agricultural dimensions and properly support research at the crossroad between biodiversity, ecosystem services and agriculture. In addition, BiodivERsA decided to support research at the crossroads between biodiversity, ecosystem services and Nature-based Solutions (which corresponds to the domain covered by the BiodivERsA SRIA) and climate. In 2017, BiodivERsA therefore proposed to the European Commission (EC) to include a COFUND topic on ‘Biodiversity and Climate Change’ in the 2019 Programme of Work of the Horizon 2020 Framework Programme, under the Societal Challenge 5 Pillar. This proposal received support from many EU Member States, and was accepted by the EC.

1.3 *Objective of the workshop*

The objective of the workshop is to develop (i) a Joint Vision of possible collaboration between FACCE-JPI and BiodivERsA with expected added value, taking into account the views of key stakeholders; and (ii) a concrete action plan and timeline for developing joint activities part of the 2019 COFUND Call and beyond.

2. Comparing Strategic Research (and Innovation) Agendas: Common priorities between BiodivERsA & FACCE-JPI

It is clear from the Strategic Research (and Innovation) Agendas that both initiatives have common priorities at the crossroad between biodiversity, agriculture and climate change issues.

2.1. - *Biodiversity related issues recognized by the FACCE-JPI SRA*

FACCE-JPI SRA available here:

https://www.faccejpi.com/content/download/4896/46018/version/1/file/FACCE-JPI_SRA-2015_Final_small.pdf

There are many linkages between the FACCE-JPI SRA, biodiversity and climate change.

- **FACCE-JPI Core Theme 1 (CT1) “Sustainable food security under climate change”**: this theme Identifies key vulnerabilities of the European food system to climate change and identifies policy options to increase resilience of European food systems under climate change. Both vulnerabilities and options to increase resilience. **Climate change risk assessment for agricultural production systems (plant and livestock), and food supplies** relate to biodiversity issues. This also applies to pathways of economic development in Europe of non-food use of biomass, consequences for food supply and for land use change, biomass production, carbon sequestration, and prices and trade.

- **FACCE-JPI Core Theme 2 (CT2) “Environmentally sustainable intensification of agricultural systems”**: this theme points to the **need for improved understanding and control of soil functioning and biotic interactions at field to landscape scales**. It also refers to **ecology and sustainable management of soil** and water resources (including restoration technologies) in the context of the costs and benefits to farmers, and to the risks of contamination of the environment and along the human food chain. Yet, the research priorities so far identified under this theme by FACCE-JPI do not clearly refer to biodiversity issues

- FACCE-JPI Core Theme 3 (CT3) is entirely dedicated to “Developing synergies and reducing trade-offs between food supply, biodiversity and ecosystem services”, and hence it is very much centred on biodiversity and ecosystem services. In the context of climate change, this core theme includes:

- i. Providing new approaches to the increased use of functional biodiversity in agricultural ecosystems (e.g. intercropping, mixtures, conservation agriculture);
- ii. Developing methods for assessing and valuing biodiversity and ecosystem goods and services (e.g. carbon sequestration, water storage,) in intensive agricultural systems;
- iii. Developing approaches for increasing synergies and reducing trade-offs between agriculture and ecosystem services in a variable environment (climate change, price volatility...) at both farm and landscape scales. This topic formed the basis for the BiodivERsA-FACCE joint call organized in 2014, and also includes designing and assessing the impact of incentive mechanisms to support increased provision of ecosystem services in agriculture, including conditions for uptake and socio-economic elements
- iv. Developing a solid knowledge base for the provision of public goods by European agriculture, so that ecosystem services are delivered efficiently and effectively

Both ii and iii are identified as key research priorities by FACCE-JPI under this theme

- FACCE-JPI Core Theme 4 (CT4) “Adaptation to climate change” refers, amongst others, to the challenge of achieving climate smart agro-ecosystems, with a need to better understand the interrelations between ecological and social systems to increase the efficiency and adaptability of farming systems to (unexpected) changes. Amongst the priorities to be addressed under this Core Theme are listed: “Integrated crop health management under climate change, with focus on emerging pests and diseases, epidemiology and deployment of resistance genes, links to soil and landscape biodiversity” and “Increasing economically viable input use efficiency by improving water quality and soil function, and better use of fertilizers”.

- FACCE-JPI Core Theme 5 (CT5) “Climate Change Mitigation” also goes beyond biodiversity issues. Yet, “alternative land use systems (agroforestry, hedges, mixed farming systems) and land and soil management systems (soil conservation, legumes and soil biology) for building above and below ground carbon stocks and increasing biomass production for food and non-food uses” has a direct link with biodiversity and ecosystem services.

- The link with biodiversity issues is strongest in CT3 and CT4, and opportunities of cooperation with BiodivERsA are explicitly mentioned in the FACCE-JPI SRA

2.2. - Agriculture and food security issues recognized by BiodivERsA SRIA

BiodivERsA SRIA available here: <http://www.biodiversa.org/990/download>

BiodivERsA clearly states in its SRIA that biodiversity issues are at the cross-roads of numerous political and socio-economic interests, which requires to account for sectors such as environment but also agriculture and fisheries and promote a cross-sectoral approach towards the conservation and sustainable management and use of biodiversity. Several priorities identified under its core and transversal themes are relevant to agriculture, food security and climate change:

- BiodivERsA Core Theme 1 (CT1) “Better knowledge on biodiversity, its dynamics and its adaptation capacity to global change: a basis for supporting biodiversity conservation and restoration”: This includes research to help predicting the effects of global change on biodiversity, and the cascading socio-economic effects for key sectors like agriculture, forestry and fisheries, either directly through changes in species range

and metabolic rate, or indirectly (e.g. establishment of pathogens and invasive alien species). It also includes research assessing the role of adaptation in a global change context

- BiodivERsA Core Theme 2 (CT2) “**Biodiversity: a fundamental asset for the functioning and resilience of ecosystems, provision of ecosystem goods and services, and improvement of human well-being**”: This includes research aiming to reinforce the knowledge on causal links (including synergies and trade-offs) between biodiversity, ecosystem functioning, and ecosystem goods and services and human well-being in different sectors – including agriculture. This requires **analysing how biodiversity relates or contributes to the maintenance and delivery of such services and their resilience to climate change and disturbances**. It also requires better knowledge on the cascading effects of direct, indirect and emerging drivers of change, separately and in combination and interaction, on biodiversity, ecosystem function and ecosystem services (at all relevant scales); and provision of methodologies to predict such effects. This **includes analysing the importance of breed/variety selection and the utility of locally-adapted genetic resources and species for the delivery of multiple services in agricultural areas** and adaptation capacity to climate change, invasive alien species and pathogens.

This Core Theme also includes research aiming to **develop and assess innovative, ecosystem service-oriented management approaches (including participatory initiatives) and elaborate common frameworks and tools for the conservation and sustainable management of ecosystem services**. In agricultural landscape, such research could improve the effectiveness of pest management in pesticide-free and pesticide-minimized farming systems and help provide viable alternatives to conventional, high chemical input agricultural systems through innovations in fields including agro-ecology, agro-forestry and natural pest control. Research under this theme will also allow for a transition to systems of food production that are based on “ecological intensification”—using land, water, biodiversity and nutrients efficiently and in ways that are regenerative, minimizing negative impacts.

- BiodivERsA Core Theme 2 (CT3) “**Biodiversity, a fundamental asset for Nature-based solutions to pressing societal issues and for promoting transition towards sustainable socio-economic pathways**”:

This includes research **exploring genetic resources and species and community diversity as a toolbox for Nature-based Solutions, promoting adaptation and sustainability**. Indeed genetic diversity and resources offer a great potential to develop Nature-based Solutions for tackling major societal challenges like climate change regulation and mitigation, and multi-functional and sustainable agriculture and forestry.

- BiodivERsA Transversal Theme 1 (TT1) “**Biodiversity and governance**”. This theme is very broad, and includes research **assessing the performance of different governance systems in supporting ecosystem services, resource sustainability and biodiversity**. It is hence also of particular importance in agricultural settings. The second sub-topic of the BiodivERsA-FACCE call included explicitly this theme.

- BiodivERsA Transversal These 2 (TT2) “**Non-monetary and monetary valuation of biodiversity and ecosystem goods and services**”. Research under this theme aims to increase the **knowledge base for developing practical and implementable natural capital accounting tools**. It also aims at studying valuation methods for nature-based solutions that can help assessing their effectiveness in terms of societal, economic and environmental assets. This could be of particular relevant in agricultural landscapes, subjected to different pressures.

- BiodivERsA Transversal Theme 3 (TT3) “**Studying biodiversity and ecosystem services based on long term surveys and experiments, re-use of existing data, and development of scenario**”. Research under this theme could guide local adaptation and management strategies in agricultural landscape; it should also help to identify ecological thresholds.

Table 1: Possible links between BiodivERsA and FACCE-JPI Core and Transversal Themes.

		FACCE-JPI SRIA				
		CT1. Sustainable food security under climate change	CT2. Sustainable growth and intensification of agricultural systems	CT3. Trade-offs between food production, biodiversity and ecosystem services	CT4. Adaptation to climate change	CT5. Greenhouse gas mitigation
BiodivERsA SRIA	CT1. Better knowledge on biodiversity, its dynamics and its adaptation capacity to global change: a basis for supporting biodiversity conservation and restoration	x	x	x		
	CT2. Biodiversity: a fundamental asset for the functioning and resilience of ecosystems, provision of ecosystem goods and services, and improvement of human well-being	x	x	xxx	xx	xx
	CT3. Biodiversity, a fundamental asset for NbS to pressing societal issues and for promoting transition towards sustainable socio-economic pathways		x		xx	xx

Overall, several research priorities of BiodivERsA and FACCE-JPI at least partly overlap and some of their main focal areas are interdependent: protecting and strengthening biodiversity depends on sound and sustainable agricultural practices which, vice versa, depend on ecosystem functionalities and services. Collaboration is therefore not only possible, it is imperative to reach strategic goals of both areas, in the context of broader sustainable development. Opportunities exist in most crosscutting areas between the Core Themes of the two initiatives, more in some than in others (see Table 1).

3. Overview of possible joint activities

Joint activities can take various forms and rely on different modalities and can be developed at every step of the research programming cycle, i.e. from mapping and programming, to research funding, capacity building of the research community, dissemination activities, etc. (see Figure 1 below).

The workshop should help identify the most promising modalities for collaboration across different phases of the research programming cycle.

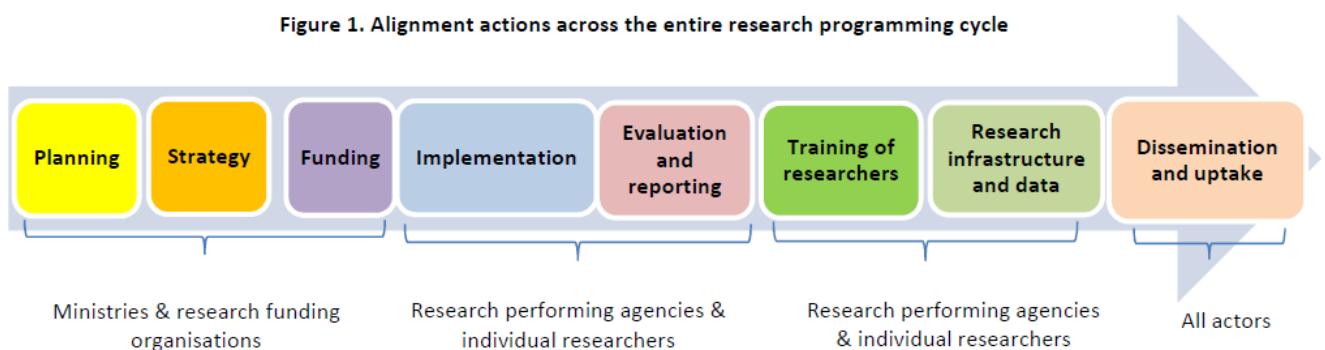
Although discussions about collaboration between European public research networks (P2Ps) often tend to focus on financial collaboration (e.g., joint ERA-NETs or joint calls for research proposals, such as the 1st FACCE/BiodivERsA call), there are many other modalities that can be used.

Examples include:

- The conduct of **joint foresight and horizon-scanning**, to anticipate emerging societal challenges at the nexus of biodiversity, sustainable agricultural development and climate change;
- The conduct of **joint mapping** of ongoing and planned (national/European/international) research programmes in this nexus, to identify possible research gaps that need to be addressed;

- The set-up of **joint knowledge hubs** (i.e., European networks of researchers from both communities), to facilitate networking and coordination of already funded research activities, strengthen researchers' capacities and promote the generation of new cross-disciplinary knowledge;
- The set-up of **thematic annual programming networks** (TAP, i.e. clusters of already funded national/JPI/ERA-NET projects), to facilitate exchange of knowledge on research methods and results;
- The organization of **joint communication and outreach activities** for policymakers and practitioners, and **joint research uptake activities** ("valorization"), to increase the impact of the funded research.

Figure 1: Collaborative actions across the research programming cycle (source: ERALEARN, 2017)



References:

- Amanatidou, e., D. Cox, G. Brenna, L. Garofalo, C. Gliootti, M. Huber, C. Lesser, M. Dinges, Anja Köngeter, S. Meyer and A. Wang. *SWOT analysis on alignment modalities*. ERALEARN2020 Deliverable D 4.5
- Eggermont H., Le Roux X., Heughebaert A., Balian E. & BiodivERsA partners (2013). The BiodivERsA database: Analysis of the competitive funding landscape for research on biodiversity and ecosystem services in Europe. BiodivERsA report, 2013; 33 pp
- Götke, N., H. McKhann, I. Albouy, M. Bura, C. Lesser, P. Aller Moran, N. Pitkänen, D. te Boekhorst, P. Wiley and the rest of the FACCE-JPI Secretariat team, C. Buffet, S. Treyer, 2015. *FACCE-JPI Strategic Research Agenda, revised edition 2016*. FACCE-JPI, 60 pp.
- Le Roux X., Eggermont H., Lange H. & BiodivERsA partners (2016). *The BiodivERsA strategic research and innovation agenda (2017-2020) - Biodiversity: a natural heritage to conserve, and a fundamental asset for ecosystem services and Nature-based Solutions tackling pressing societal challenges*. BiodivERsA, 86 pp.
- ERALEARN, 2015. *Report on the Definition and Typology of Alignment*. ERALEARN2020 Deliverable 4.1
- FACCE-JPI, 2013. Toolbox of potential funding instruments. Deliverable 3.4
- FACCE-JPI, 2016. *Strategic Research Agenda of the Joint Programming Initiative on Agriculture, Food Security and Climate Change, revised edition*
- Meyer, S., M. Dinges, A. Wang, M. Huber and C. Lesser, 2017. *Toolbox of current and novel alignment modalities and instruments*. ERALEARN2020 deliverable 4.2