



DIVERSIFOOD

*Embedding crop diversity and networking for local
high quality food systems*

Grant agreement n°: 633571

H2020 - Research and Innovation Action

Deliverable 1.4

***Key-elements, barriers and bridges for holistic,
multi-actor research aimed at enhancing
diversity within crop, farming systems and
food chains***

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Due date: February 2019

Actual submission date: February 2019

Project start date: March 1st, 2015 **Duration:** 48 months

Workpackage concerned: WP1

Concerned workpackage leader: Edwin Nuijten

Lead Beneficiary: Véronique Chable

Dissemination level:

- ☒ **PU:** Public (must be available on the website)
- ☐ **CO:** Confidential, only for members of the consortium (including the Commission Services)
- ☐ **CI:** Classified, as referred to in Commission Decision 2001/844/EC



Comments:

The authors changed the title of this report slightly, renaming it «Key-elements, barriers and bridges for holistic, multi-actor research aimed at enhancing diversity within crop, farming systems and food chains» rather than «Proven Key-elements, barriers and bridges for diversity within crop, farming systems and food chains» as stated in the DoA. The change makes the title consistent with the objective of Task 1.3, clearly showing the focus on multi-actor research activity.

Abstract

DIVERSIFOOD has built its research activities on the perspective that re-introducing diversity in the agrifood systems is a complex process that demands **a comprehensive, integrated approach**, able to take into consideration a variety of aspects - including ecological, agronomical, organisational, economic, institutional, social, cultural, ethical, legal and political aspects - and the associated interdependencies. This requires that the research approaches address and integrate all these aspects, at the multiple scales they manifest, mobilise all the available knowledge and experience, and, to that end, interact with all the diverse actors involved. DIVERSIFOOD has conceived such a research approach as **a multi-actor and democratic, inter- and transdisciplinary, multi-dimensional and systemic, reflexive and transformative approach** (see D1.3).

This approach has resulted from the collective reflection of all the partners on a wide range of experiences within DIVERSIFOOD. Over the course of the project, partners were involved in WP1 in an **interactive and iterative process of collective reflection** aimed at identifying **key-elements and potential barriers and bridging elements** in the implementation of this approach. Overall, this reflection confirmed the general agreement on the relevance of the four components of the comprehensive approach for multi-actor research; going in greater detail, it highlighted its main elements but also the existing difficulties and potential enabling elements. Among the many aspects mentioned:

- a) the **main key elements** are: complementarity of different actors and different knowledges; variety of perspectives/dimensions to consider and integrate; empowering participatory approaches; centrality of mutual learning; benefits stemming from the close relation between research and practice and from the iterative process between knowledge co-creation and implementation into practices; context-based optimisation of research setting up and operationalisation; holistic approach allowed by combination of different perspectives, knowledges and experiences; consequent possibility of multiple responses to problems; reflexivity as basic condition for transformative research; adaptive management of research (by modifying short-term goals or methods among others) to maintain coherence with principles and goals;
- b) the **main barriers** are: time and budget constraints in research activities; mismatch between the time needs of the real processes and the timing and objectives of the projects; imbalances of power; inexperience of interaction with certain disciplines; lack/deficiencies of openness to other perspectives; difficulty to manage such a complex situation and maintain coherence; difficulty to manage adaptation and improvement in the course of the project;
- c) the **main bridging elements** are: building of trust and creating of an inclusive atmosphere; focused learning processes, aimed developing common language and mutual understanding; investing on training / motivation building; invest on spaces and facilitation actions to ease interaction among different fields of knowledge and action; invest on spaces and facilitation actions to ease collective learning; adopting a reflexive approach and an adaptive management of research; implementing a collective reflexive approach in order to increase the transformative potential of research.

As a further outcome of the analysis of partners' research work and of the collective pathway of reflection, **some recommendations for policy makers** have been worked out, aimed at creating conditions for spreading and strengthening the multi-actor approach to research.



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Objectives

The **WP1** of the DIVERSIFOOD project aimed at identifying and specifying several conceptual and methodological elements to provide inputs to the other project WPs (2 to 5) and, more in general, to contribute to the debate on the most suitable approaches to deal with agrobiodiversity enhancement issue.

Within WP1, **Task 1.3** aimed at developing **an overarching framework** in which the specific concepts and reflections on methodological aspects developed in Tasks 1.1 and 1.2 are integrated and further elaborated. In particular, Task 1.3 has pursued the following two objectives:

- to define **a proven concept for a holistic, multi-actor approach suited for participatory research** aimed at maintaining and enhancing agrobiodiversity at various levels (genetic diversity in crops, farming systems, and food chains). The outcome of this work constitutes the **Deliverable 1.3**;
- to create **an overview of key-elements and potential barriers and bridges**, that is to identify enabling or hampering factors in the implementation of holistic, multi-actor approaches in the research aimed at maintaining and enhancing diversity in farming systems and food chains. The outcome of this work constitutes this Deliverable (**D1.4**).

The two deliverables are indeed closely integrated, as they share the general conceptual framework, the methodological and operational aspects (the process of collection of information from the DIVERSIFOOD partners and their processing over the project period), and the reflection on the insights provided by the meta-analysis of partners research experience. The focuses of the two deliverables and the related main outcomes are however different, as established in the DoA.

The ultimate goal of the Task 1.3 work is to distil **recommendations** for using holistic, multi-actor approaches in future projects. These recommendations constitute the final part of this Deliverable.

Conceptual framework

WP1 team has built its research activities on some assumptions, which affected the way to contribute to the project activities, that is setting the work to do with the other partners, aimed at defining a conceptual-methodological framework for doing research on the issue. These assumptions stemmed from the experience it had gained in previous research activities, furthermore shared with most of the partners. This provided assurance of a good alignment with partners around the entry points of the WP1 work.

Agrobiodiversity enrichment is part of a process of transition to more sustainable models of production and consumption. Within the broader pathway of change, it implies a shift from the paradigm of uniformity and standardisation of genetic materials underlying food production to one of maintenance and enhancement of the diversity of plants, crops and food systems. The former has been instrumental to the productivism paradigm that has characterised the development of agroindustry, driven by a few powerful players and leading to negative externalities; the latter wants to contribute to the resilience and transformation of farming and food systems according to a holistic set of interconnected ethical, social and environmental values, looking at the wellbeing of all the living systems and at a broad societal involvement around a new food culture.

Into a transformative research perspective, in DIVERSIFOOD this meant co-production of new knowledge and sharing and mobilisation of this knowledge to contribute intentionally to processes of social change. This specific approach of our research, which informs our commitment as scientists and practitioners, had major epistemological implications, shaping the WP1 team approach to the topic.

Re-introducing diversity in agrifood systems is a complex process that demands a comprehensive and integrated approach, open to interaction with all the diverse actors directly and indirectly involved and able to take into consideration the variety of aspects that intervene to affect the functioning of farming and food systems and actors' actions. These aspects include ecological, agronomical, technological, organisational, economic, institutional, social, cultural, ethical, legal and political aspects, as well as the related interdependencies. The research approaches has to address and integrate all these aspects, at the multiple scales they manifest, and mobilise all the available knowledge and experience to that end.

In theoretical terms, the WP1 team adopted an integrated holistic approach, taking into account the need to mobilise the multiple actors, resources, processes, interactions, interdependencies that influence the management of the question. Through this approach, it was decided to evaluate partners' research activities already oriented to enrich the cultivated diversity and to embed it in food supply chains. The aim was to uncover, in the reality of the research activities, the ways to operationalise the multi-actor approach, the involvement and integration of different types and sources of knowledge, the consideration of the diverse aspects involved and the capacity to integrate them, as well as the capacity to develop awareness, self-criticism and, thus, reflexivity on the research actions carried out.

Methodological aspects

All partners were involved in the work of WP1. Over the course of the project, all partners contributed, through **a participatory and iterative process**, to the identification and refinement of concepts, methodological approaches and associated frameworks, based on their experiences and new insights from their research activities, as well as on their interaction within the DIVERSIFOOD project. Indeed, the analysis of partners' development and implementation of methodologies and experimental designs and the collective discussion of the associated difficulties and results allowed defining the building blocks of the holistic, multi-actor research approach and identifying successful or hampering factors in implementing it.

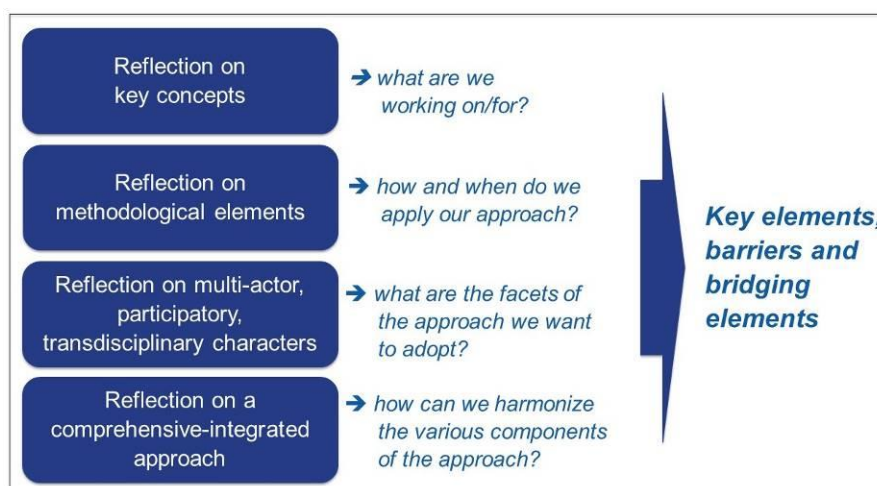
As in general for the entire activity of WP1, the identification of enabling or hampering factors in actualising holistic and multi-actor research built an **analysis of the DIVERSIFOOD research experience**. The empirical materials for this analysis included:

- partners initial positioning with regard to the main concepts involved in agrobiodiversity management and the collective discussions to distil a set of key-concepts whose definition and importance is agreed upon among partners (see D1.1);
- analysis of the specific research activities carried out by the partners in the project (analysis of case studies, or other activities developed in the WPs), through frames developed and provided for that purpose (see D1.2);
- results of collective work done by the partners during the annual meetings (from the kick-off meeting in April 2015 to the last meeting in January 2019) and of individual work done over the inter-meeting periods; this work was aimed at uncovering partners' positioning with regard to the main methodological approaches adopted in

their research activity and at stimulating collective learning and, in case, partners' repositioning.

This analysis concerned different areas (key concepts, methodological elements, specific characters of the participatory-transdisciplinary approach, and components of a comprehensive-integrated approach), which involved the work developed by the three tasks of the WP1 in a closely integrated way (indeed the partners in charge of the three tasks cooperated in the work of each task).

In addition to help the construction of an overarching framework (see D1.3), this articulated process of collective reflection allowed uncovering **key elements, barriers and bridging elements** (interpreted, respectively, as critical, positive aspects to consider, difficulties or hampering factors, and enabling factors) for the implementation of holistic, multi-actor research.



Process and related outcomes

In this section, we briefly illustrate each area of the analysis (for a more detailed description see D1.3) and the related outcomes in relation to the objective to identify **key elements, barriers and bridging elements**. To do that, we refer to the several steps realised in WP1.

Co-defining key concepts

During the project, the partners were involved first in a work of identification of **keywords** (see Figure 1) concerning the main project topic and then in the progressive definition of a set of **key concepts**.

This work was very useful to uncover the different perspectives of the various researchers, due to different backgrounds and experiences, but also the real multi-dimensionality of the topic. As well, it showed the different researchers' normative orientation and attitude towards the multi-actor dimension. The work thus allowed partners to align around a common awareness of the complexity of the matter and the related methodological challenges, engaging them in a work of de-construction and re-construction of their approach of (action-) research on agrobiodiversity issues. This also highlight the importance of creating a common language, a semantic basis enabling effective communication among partners and with other stakeholders.

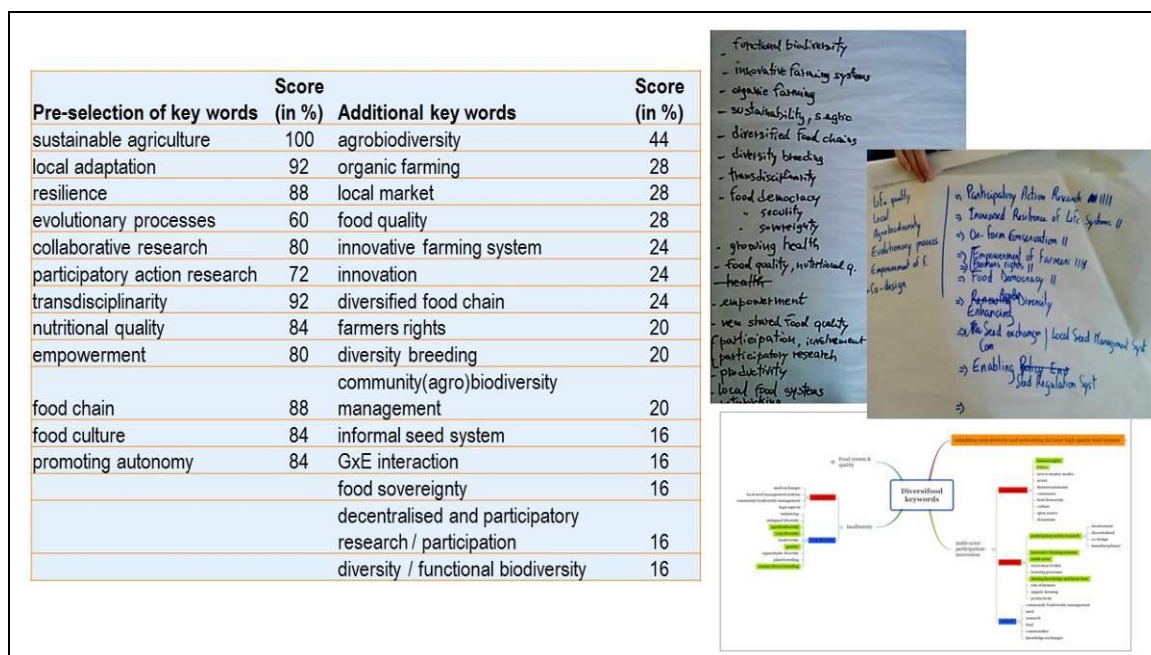


Figure 1: Results of the exercises on keywords since the kick-off meeting in St.Gildas, in April 2015

The identified key concepts clearly show a shared recognition of the importance of ‘diversity’. Cultivated diversity is seen as condition for environmental and social sustainability of food systems and of food quality. Diversity is also a constitutive element of an innovative, participatory and democratic approach both in managing agrobiodiversity and food-related choices and in designing and carrying out research activities. The potential of diversity is then expressed by the concepts of co-evolutionary processes and resilience, which refer to the interdependence of multiple spheres.

Another opportunity for partners to experience the existence of different perspectives and the importance of achieving shared meanings was represented by the discussion on the terms used when dealing with plant breeding and agrobiodiversity. The exercise was proposed during the third annual meeting in Vienna (March 2018). The aim was to elaborate a common and agreed set of definitions of the different forms of cultivated varieties, integrating biological, economic and sociological research perspectives, and to identify a set of terms that could fit the DIVERSIFOOD approach.

This work was not easy and, once again, challenged partners in distinguishing and integrating different perspectives, maintaining a coherent normative orientation in relation to the main shared goals (see Table 1).

type / description	Genetic structure	Breeding techniques	Farming practices	Processing	Sociological	Economic	Cultural	Legal/political
Genetic resources	All genetic structures are possible	Every techniques including biotechnological term focused on genetic level	Seeds used/stored but whole cultivar, thus disconnected of food chains	Conserving genes, not whole cultivar, thus disconnected of food chains	Disconnected from farmers-breeders concept of plant breeding	Natural resource	Conventional concept, not used for PPB	Policy concept; Part of biodiversity management



Population	Mostly heterogeneous; Genetic diversity dynamic	Breeding concept and overarching technical term for heterogeneous material e.g. in UK, just CCP (Composite Cross Population), or dynamic management of populations bred by farmers	Not refer to this, only for breeding	Not refer to this, only for breeding	Not connected	Not so much used on market	Not connected	Technical term; Temporary European experiment for marketing
Landraces	Population, heterogeneous and evolving; The heterogeneity depending on pollination biology of the species	Bred by the farmers/mass selection; locally adapted	Mostly disappeared after WW2. Some revival XXI century with low input agricultures and marginal regions	Mostly associated to artisanal processes without high standardized processes	Connection to locality; Relationship with farmers related to the cultural context	Niche market concept reappropriated; Robustness provides basic incomes	Continuity of cultivation through time; Current importance depending of country/region	Belong to tradition? No Intellectual Property (IP) rights; Only considered as EU conservation varieties, politically neglected today
Heirloom	Population, heterogeneous	Mass selection; Bred by farmers and amateurs	More a UK concept; Depends on the country	Artisanal processes	Connected to heritage concept; American slang; Pedigree of plants correlated with pedigree of people using it	Marketing concept	Traditional values en Europe, UK "folk varieties"; A long history of use "heritage"	Not really in discussion; No IP rights
Traditional variety	From homogeneous variety to populations; Can be a landrace; Bred by farmers or breeders with selection crossing respecting natural processes	No biotechnologies; Mass selection, farmer selection or old conventional varieties	Sometimes not used any more. After WW1 no more; Local adaptation and traditional practices; Used widely during certain period by certain people; Low-input and organic agricultures	Artisanal processing; Traditional practices; Processing adapted to each variety population... Good quality artisanal food	Food culture associated to old way of life; Has a history but can grow in different regions often with knowledge associated; Community management	Marketing uses often the concept with imaginary used in marketing; Empowerment and circular economy	Connected to local areas tradition; History heritage (protecting it); Linked to the past traditions, linked to "old" concept	Variety has different uses, and interpretations; No IP rights; Conservation varieties sometimes
Local variety	Can be traditional or new variety; Mainly heterogeneous	Developed and mainstream in one region; Farmer selection/mass selection; Bred by farmers with or without participatory plant breeding (PPB) programmes			Can be old or newly developed embedded in local commons; Knowledge associated	Niche market		
Farmer/peasant variety	All possible; Mostly heterogeneous	Mass selection and new methods for breeding diversity testing (PPB)	All possible	Farm saved seeds; Self consumption or short chains	Opposite of modern variety: owned by farmers; Peasant has different meanings in different countries; Innovation and collective management	Local economy usually species specific; Seed autonomy; Added value	Peasant – for some countries, the word has bad connotation; Seed autonomy	Peasant, alternative agriculture term; No definition
Modern variety	Phenotypic and genetic homogeneity except for Open Pollinated Varieties (OPV)	All techniques	Large scale industrial agriculture; specific seeds of markets; Often associated with high level of inputs; Can also be used for low input and organic agricultures	All produce for global markets; Uniform for processing; Bred for industrial processing	Produced and distributed by commercial seed companies; Disconnection with farmers; Mainstream agriculture	Business for seed companies, more driven by markets than by farmers' needs; Traded within general mass market and industrial agro-industry chain	No attention for farmers cultural values; present legal environment; Registered on official catalogue; Legally protected by Intellectual Property (IP) rights	Perfectly supported by present legal environment; Registered on official catalogue; Legally protected by Intellectual Property (IP) rights
Cultivar	Generally uniform except OPV; Word used sometimes in botanical books				Is a product			No legal definition; when legally protected, see modern variety

Table 1: Results of the exercise during the 3rd AM in Vienna, in March 2018

A parallel collective reflection was aimed at identifying the paradigm of reference for the approach being developed in DIVERSIFOOD. This reflection, based on the more general thinking on theoretical-conceptual approach to the agrobiodiversity management topic, started at the beginning of the project, developed and consolidated over the project, assuming a more precise form in its last part. It led to the definition and sharing of a specific **paradigm shift**: from the uniformity and standardization paradigm, which underpinned the development of the agri-food industry, to the paradigm of the respect for any form of life, and thus for any manifestation of diversity in food systems (see D1.1 and IF # 16). Also in this case, partners were asked to overcome their specific perspectives and to look for coherence with the shared goals and commitment.

This area of collective reflection contributed to highlight the following **key elements, barriers and bridging elements**:

key elements	barriers	bridging elements
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<ul style="list-style-type: none"> - variety of perspectives/dimensions to consider and integrate - variety of knowledge and experience to mobilise - shared vision on the key role of diversity to apply at any level - coherence with principles and goals at the basis of the research 	<ul style="list-style-type: none"> - lack of a common language and, thus, of clarity on concepts and aspects - lack/deficiencies of openness to other perspectives - lack of contexts where to interact with diverse people 	<ul style="list-style-type: none"> - interaction among different actors - existence of contexts and facilitation actions to ease interaction among different fields of knowledge and actions - existence of contexts, commitment and facilitation actions to ease collective learning
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Reflection on methodological elements

The second important area of collective reflection concerned **methodological elements** in dealing with agrobiodiversity issues, taking into account their complexity, the different perspectives involved, and, consequently, the different fields of research and associated frames and types of knowledge to be mobilised.

Partners' **awareness of the implications of 'diversity' also on methodological aspects** was the entry-point. The work done on the key concepts had greatly contributed to the achievement of this awareness, showing the co-existence of and interaction among different processes - social, ecological, technological, cultural -, across multiple scales, and involving different actors with different views and competencies, and different methods of research.

Another significant opportunity in this sense came when partners were asked to position their different research methods according to two traditional dichotomous representations: quantitative vs. qualitative nature, and explanatory vs. descriptive nature (Figure 2). In addition to uncover the variety of research methods involved (not always all known by partners), the exercise results also clearly showed the lack of sharp positioning for all the methods and the existence of rather nuanced methodological positioning by partners. In general, they did not consider it a problem to combine different types of methods (e.g. quantitative and qualitative, or natural and social science methods) or to assign different features to the same method. These results appeared encouraging for the search of a new comprehensive and integrated approach, based on the dialogue and interaction among different disciplines and fields of action.

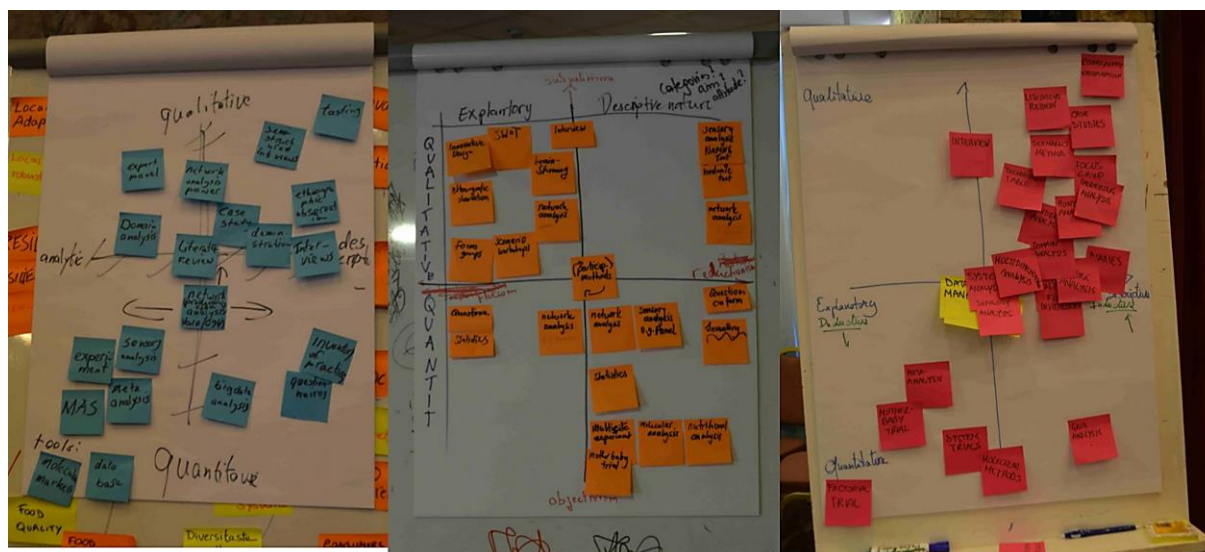


Figure 2: Results of the exercise during the 1st AM in Nicosia (Cyprus), in February 2016

Afterwards, partners were helped to reflect more in depth on the methodological aspects, starting from **an alignment around a common terminology**. To that end, they were provided with **a classification of methodological elements of research** including *approach*, *methodology*, *methods* and *tools* (see Table 2).

<i>Approach</i>	It explains the aim of the research and the vision that shapes the research. For example, it may present the purpose to explore in depth the processes underlying variety enhancement or market valorisation of products derived from the diversified genetic resources.
<i>Methodology</i>	It refers to the rationale and the philosophical assumptions that underlie any natural, social or human science study. The methodology includes the principles that determine how such tools are deployed and interpreted. In short, it relates to how the reality is approached and analysed. It guides the focus and intent of the research, explains the research questions and justifies the adopted methods. According to the ways approaching reality, for example, it may present the choice to adopt a positivist, constructivist, descriptivist, post-modernist or subjectivist stand, as well as to use quantitative or qualitative data or to adopt participatory processes.
<i>Methods</i>	Technical procedures applied to conduct the research, (i.e. data collection, data analysis and reporting results), according to the methodological choices.
<i>Tools</i>	Items used to implement a method, including software, for analysis and data management.

Table 2: the developed definitions of the research elements approach, methodology, methods and tools

The idea was to arrive to a shared understanding of these elements and to see their interconnection, as well as to increase partners' awareness of the variety of items included in each category.

This set of methodological elements had been designed to be applied to an ideal frame of research activity, including: *research set up* (problem and goal definition); *research operationalisation* (choices related to approach, methodology, methods and tools); *assessment of the achievements* of the research work (in relation to the appropriateness and effectiveness

of the methodological choices done, and, more in general, the achievement of the research goals).

This frame was aimed to allow uncovering partners' attitude towards each stage, in relation to the methods adopted, as well as the attitudes towards the internal coherence of the research designing and implementation and its evaluation. To that end, partners were asked to describe a case study, according to the frame, illustrating approaches, methodology, methods and tools used. Almost all partners answered the request, providing 17 analyses.

The analysis done by each partner (translated by the WP1 team in posters, see D. 1.2) was then discussed collectively at the 2nd annual project meeting (in Bologna, in February 2017). The aim was to encourage partners to reflect on their research experience and their methodological choices from the perspective of the implementation of multi-actor and interdisciplinary and transdisciplinary approaches and highlighting the associated difficulties.

At the workshop, partners were first asked to use the following matrix to discuss each poster in small groups:

- ❖ Matrix 1: *After two years of research, what do you think about the choices concerning goals definition, methods, tools and the assessment of achievements?*

	Goals	Methods	Tools	Achievements
Poster 1				
Poster 2				
Poster 3				
Other				

Then, with the same group, they were asked to evaluate the methodological choices in the stages of research set up and research operationalisation focussing on the issue of actors' involvement; in particular:

1. to reflect on the form/degree of actors' involvement distinguishing between involvement in thinking and in doing (respectively considered as expression of participation in the decision-making process and in the actualisation of the decisions made), in the steps of the research process;
2. to evaluate the different steps of the research in terms of actualisation of transdisciplinarity.

To do that, the following second matrix was used:

- ❖ Matrix 2: *How do you evaluate these methodological choices (goals definition, methods, tools) and the achievements according to the issue of actors' involvement and transdisciplinary approach?*

	Goals	Methods	Tools	Achievements
Multi-actors involvement in thinking				
Multi-actors involvement in doing				
Further thoughts on transdisciplinarity				

This exercise allowed eliciting some first significant elements for conducting multi-actor research on agrobiodiversity issues, especially with regard to: level of different actor involvement, adoption of methodological approaches of natural and social science disciplines, combination of these different approaches, role of the different types of knowledge and methods. Another issue, which participants agreed on, was the iterative nature of the research process and the related need for / possibility of reformulation of research questions or methodological choices to take into account unexpected results or other aspects that can emerge during the process.

The following list refers to the main points that emerged:

- The development stage of project influences the approach: projects at beginning may use more quantitative approaches (abstract tools) than projects at advanced stage that may use more qualitative approaches
- Building of trust is important. To improve the multi-actor approach, we should discuss more with farmers and other actors in early stages and create trust relationships
- Decision-making is a continuous process. It is important that the long-term goals remain the same, but that the short-term goals are renewed according to practical results, with consequent adaptation of methods used.
- All the actors of multi-actor projects should decide together on the way to conduct the research and how to communicate findings.
- Time and resources are crucial for the participatory process. This process needs time, even beyond the project duration.
- The role of interaction is crucial. We need to facilitate and stimulate discussions between farmers and scientists, awareness rising of their roles in producing knowledge and solutions to problems, achievement of shared goals.
- The role of facilitation is crucial. It is important to bridge the gap between scientific and farmer methods. Challenge of bridging scientific objectives and expectations /preferences of practitioners.
- In part of the process some detailed knowledges need to be developed/generated by specific partners: high-tech tools are used by scientists and artisan tools by practitioners. Both can provide very important information, and hence stimulate the process between scientists and practitioners.
- Unexpected results oblige the group to question itself on the research question asked, the methodology and methods used.
- All involved actors need to be aware of possible ideological interpretation of results. To stimulate the process, an evidence-based approach is important.
- Importance of adapting methods and tools to the context
- A transdisciplinary/collaborative project is really strong when scientists get approached by practitioners (“proof of usefulness”)
- Importance of not narrowing the studies at the beginning
- Complementarity of observation of scientists and practitioners
- With practitioners it is important to work on something concrete: this is easier with applied sciences (something to be seen in the field, or held in the hand), than with social or theoretical sciences (too abstract)
- Qualitative approach helps to have a better comprehension of social process; it is suitable for action-research
- Importance of the evolution that takes place through interaction => mutual learning
- Importance of optimising experimental design (adapting statistical method) => involvement of more people and more participative
- With too many constraints in experiments => only few farmers can be involved in the experiment.
- Outcomes may be not linear. There may be iteration. Importance of integrating the added value of the iterative process

- Importance of iterations between doing and validation that lead to develop new questions so changing the designing
- Moderate power relationships between researcher and farmer

The analysis of the findings allowed identifying the following main elements, and hampering and enabling factors:

key elements	barriers	bridging elements
<ul style="list-style-type: none"> - possible co-presence of quantitative and qualitative methods, according to the stage of the research process - different degree of transdisciplinarity according to the stage of research process - existence of trust between scientists and practitioners - iterative nature of the research process - adaptive management of research (by modifying short-term goals or methods) - shared decision-making - availability of time and resources - interaction for awareness rising of scientists / practitioners' roles in producing knowledge and solutions - choice of methods and tools in relation to the context and to the research question - optimisation of experimental design to increase participation - complementarity of scientists' and practitioners' role - interaction generates mutual learning 	<ul style="list-style-type: none"> - need of time, beyond project duration - lack of time or resources - practitioners' greater difficulties with social and theoretical sciences than with applied sciences - existence of unbalanced power relations between scientists and farmers 	<ul style="list-style-type: none"> - interaction among different actors (e.g. scientists/farmers) - facilitation to ease interaction among different fields of knowledge and action - facilitation to discuss and combine different objectives and expectations - practitioners as promoters, involving scientists - building trust between scientists and practitioners

Exploring multi-actor, participatory and transdisciplinary character of research

The effort to analyse the articulation, variety and interconnection of the methodological choices, leading to the awareness of the specificities of multi-actor and transdisciplinary approaches, was followed by a deeper reflection on the meanings and implications of the implementation of these approaches.

Partners were encouraged to analyse more in-depth the aspects discussed at Bologna meeting. To that end, each of them was asked to fill in a table aimed at evaluating the involvement in the research stages of the different kinds of actors, the types of resources mobilised (different knowledge resources and other material and immaterial resources used in each phase) as well as the different methods used. The following table shows these elements in detail (Table 3):

type of actors	advisors, breeders, consumers, intermediate users, processors, farmers, public actors, retailers, scientists		
type of resources mobilised	knowledge resources	academic disciplines	more practical fields of knowledge
		economics	economic considerations
		sociology-communication	networking, relational aspects, communication skills
		marketing	relationship with final market
		agronomy/biology	farming
		genetics	breeding
		science of food quality	practical knowledge on food quality
		Science of Food processing	practical knowledge on food processing
		law and political sciences	mobilisation on legal and policy issues
		informatics	ITC competences
	Other types of resources	time /labour	
		money	
		small equipment	
		social capital	
		human capital	
		physical capital	
methods used	literature review,		
	field visits/meetings to exchange information/ networking/ evaluate results and discuss methods and progress of the project		
	growth chamber experiments		
	on-station field experiments		
	on-farm demonstrations / experiments (including crosses and selection)		
	field data collection (qualitative and quantitative)		
	molecular data collection		
	organoleptic data collection		
	nutritional data collection		
	collecting quantitative data on actors' preferences and attitudes (farmers, processors, bakers, consumers)		
	semi-structured interviews		
	focus groups		
	mapping and network studies		
	domain / content analysis		
	descriptive statistical analysis		
	multivariate statistical analysis		

Table 3: Types of actors involved, resources mobilised and methods used

On the basis of the results from the tables filled in by the partners and the previous gathered information, for each case study a scheme was then elaborated (see Figure 3), showing the

relations among the different actors involved in the research activities, the methods utilised by each actor, as well as the (knowledge and other) resources utilised. Subsequently, partners were asked to check and add any information to these schemes if necessary.

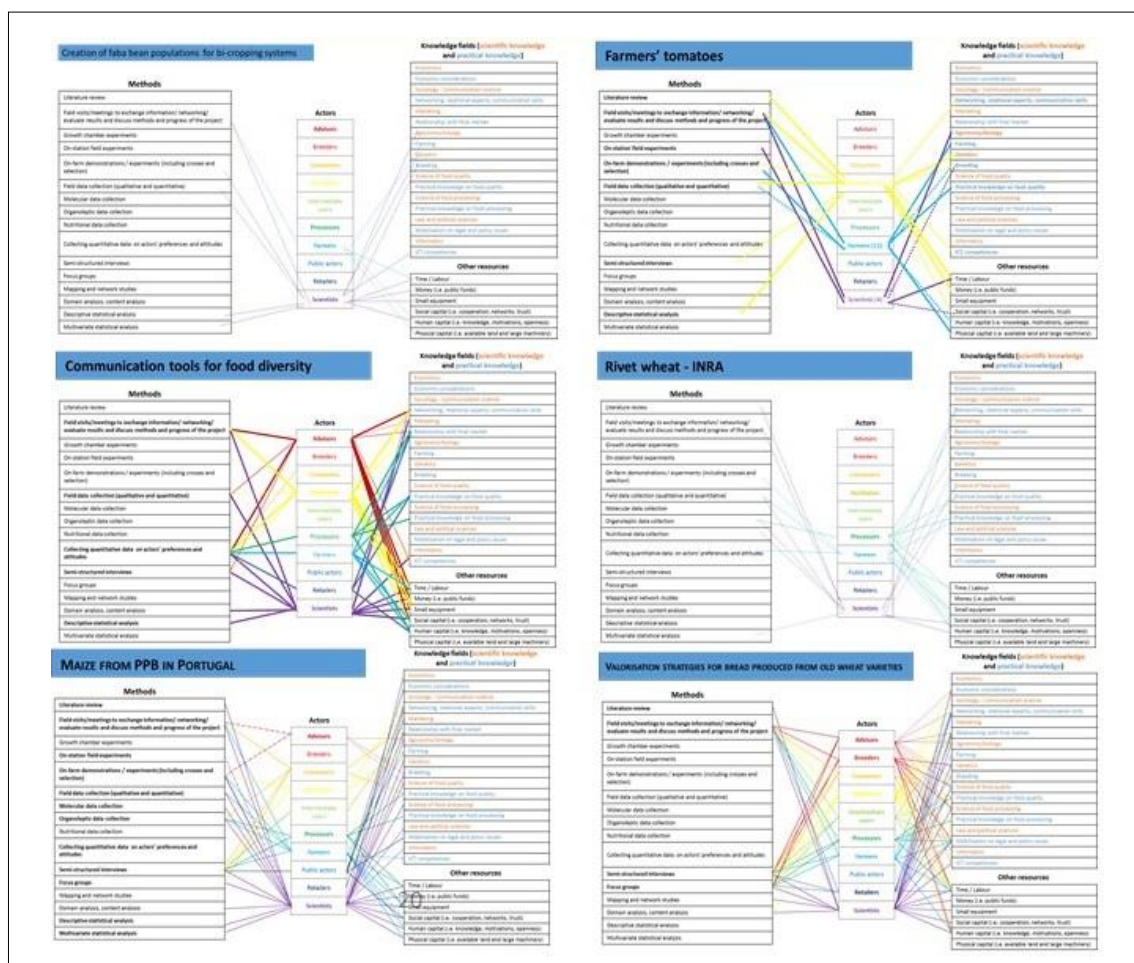


Figure 3: Some of the schemes showing connections among actors, methods and resources

These schemes were very effective in visualising the features of the approaches adopted and the variety of situations existing in the research experience, thereby stimulating partners' awareness rising further. The data provided by the partners in these schemes were processed in order to compare the number of actors, methods and resources involved in each case, and their various connections (see Table 4).

Case nr	Research focus (knowledge fields and # actors)	integration (between methods and actors, and knowledge fields and actors)	# methods / actors used	# all actor groups	# all methods	# all methods / # actor groups	# lines methods-actors	average methods / actor group	# all knowledge fields	# knowledge fields / # total actor groups	# lines actors-knowledge fields	average knowledge fields / actor group	Total # of lines (actors with both methods and knowledge fields)
	corresponds best with number of actor groups	corresponds best with total number of lines (actors with both methods and knowledge fields)	corresponds best with number of methods / # actor groups										
1	medium	medium	many	2	5	2,5	6	3,0	5	2,5	5	2,5	11,0
3	medium	high	very high	2	8	4,0	11	5,5	4	2,0	4	2,0	15,0
5	medium	high	many	3	7	2,3	11	3,7	7	2,3	9	3,0	20,0
12	medium	high	medium	3	4	1,3	12	4,0	8	2,7	9	3,0	21,0
14	medium	high	many	3	8	2,7	10	3,3	7	2,3	11	3,7	21,0
2	broad	high	medium	4	5	1,3	12	3,0	9	2,3	11	2,8	23,0
4	broad	high	many	4	10	2,5	15	3,8	11	2,8	17	4,3	32,0
8	broad	high	many	4	8	2,0	12	3,0	10	2,5	11	2,8	23,0
6	broad	high	many	4	10	2,5	14	3,5	12	3,0	17	4,3	31,0
10	broad	very high	many	5	8	1,6	25	5,0	8	1,6	15	3,0	40,0
7	very broad	very high	medium	7	6	0,9	17	2,4	10	1,4	32	4,6	49,0
9	very broad	very high	medium	7	6	0,9	18	2,6	6	0,9	21	3,0	39,0
13	very broad	very high	medium	9	6	0,7	28	3,1	14	1,6	46	5,1	74,0
11	very broad	very high	many	8	12	1,5	30	3,8	17	2,1	27	3,4	57,0

Table 4: Types of actors involved, resources mobilised and methods used. An analysis based on the case studies of 13 partners.

Together the analyses of the data from the tables and the schemes provided evidence of the variety of ways to implement a multi-actor approach, in terms of actors involved (ranging for examples from wide involvement of the different kinds of actors to situations where this is much more limited), the forms and level of involvement, the variety of fields of knowledge involved and actors' relations with resources and methods used.

Based on the specific characters of each case, this variety can be put in relation to the diverse research questions and the related methodological solutions - methodologies, methods and tools - that the research settings may require. Thus, the kind of research and associated needed technology (in broad terms) condition the more or less inclusive character of the research as well as the transdisciplinary character it can assume through integration of different knowledge fields and methods. For example, when the research question deals with a specific, technical aspect of the farming system (e.g. improving cross-pollination of a crop) a few knowledge fields are needed. A different situation occurs in case of a question that touches on various elements of the local system (such as, for example, introducing a new farm product on the market, which requires optimising a complex interplay between farming and marketing practices to improve production, processing and marketing). The situation may however evolve over the research process, leading to a progressively higher involvement of actors. The degree and speed of this evolution during the research process depends on a large range of internal and external factors, making the higher involvement of actors in some cases more possible than in other cases. The dynamic character of research also emerged when considering, in the iterative process of research, the need for reformulation of / definition of new research questions, because of unexpected results or other aspects that can emerge during the process, or the need for adjustments due to other changes within the group of actors involved.

The WP1 team started to develop this reflection in Task 1.2, which led to the production of a toolkit aimed at providing practical advices as well as five practical examples to illustrate the variety of ways to operationalise a multi-actor approach (see Booklet #1 *"Toolkit to foster multi-actor research in agrobiodiversity"*). A description of this work is also included in D1.2.

This analysis conducted on the material provided by partners also led to collectively identify the role played for successful interactions among the involved actors by the implementation of some key elements (building blocks). They included: the existence/development of a common will, a common vocabulary, trust, transparency in the process, facilitation, resources and adapted distribution of the work. The following table illustrates these elements in detail (Table 5).

Common will	A common will to investigate certain aspects or to solve certain problems is crucial. This can lead to the definition of the common question or set of questions to drive the design and implementation of the research.
Common vocabulary	Actors with different types of knowledge, know-how and experience need to develop a common vocabulary. It may need to be continually updated throughout the process.
Trust	Building trust among the different actors is crucial, particularly during the early stages of the project. It creates cohesion and consolidates the involvement of the participants in the group. It also moderates the power dynamics in the relationships. It may even create conditions for future collaboration between the partners.
Transparency	Transparency is needed when different actors interact. It complements trust and helps build mutual confidence.
Facilitation	Multi-actor research implies dynamics in human relationships and interactions among people with different backgrounds and points of view, visions, etc. There is a specific need to facilitate and stimulate interactions, especially bridging the gap between scientists' and practitioners' objectives and expectations, and create trust. The role of facilitator can be played also by scientists or practitioners.
Resources	In addition to research operationalization, time and financial resources have to be considered for the collective and collaborative process. Time (especially collective time) is one of the main resources in multi-actor research. It has to be translated into budget items and specific skills (see "facilitation").
Appropriate distribution of work	Different levels of participation are possible during the research process. Some tasks, especially those concerning decision making, have to be carried out collectively to increase the democracy level, while other particular actions, needing specialist knowledge (from scientist or practitioners), can be left to dedicated actors. This can stimulate interaction between scientists and practitioners.

Table 5: Key elements for successful interactions among the involved actors

A significant achievement of this work is the recognition (or confirmation) of the weight of specificity or, in other words, of the inappropriateness of a unique research model (*one-size-fits-all*). More in general, this is the main achievement about multi-actor approach: every multi-actor research may have its own approach, adapted to the local context, because of the need to take into account specific crop traits, agro-ecological elements and socio-cultural factors. The empirical evidence also showed how this approach can assume different shapes, according to the evolving needs of knowledges and consequent involvement of actors in the course of the research process.

Based on this work, the following main key-elements, hampering factors (barriers) and enabling factors (bridging elements) were identified:

key elements	barriers	bridging elements
<ul style="list-style-type: none"> - awareness of existence of a variety of methods and tools and the need to choose the most appropriate for the specific research question - need to combine different forms of knowledge - scientific and experiential, in the various fields - awareness of the possible different mobilisation of knowledges/methods over the research process - awareness of the possible different involvement of actors depending on the research question/stage - iterative process between knowledge co-creation and implementation in practices 	<ul style="list-style-type: none"> - lack of a common vocabulary - time and financial resources limitations - difficulty of interaction among people with different backgrounds, points of view, visions 	<ul style="list-style-type: none"> - focused learning processes, leading to common terms - collectively design of the allocation of resources and time needed for the various research activities - facilitation aimed at easing interaction among different actors

Building an overarching framework

The shared reflection on key concepts, research approaches and methodological aspects constituted important steps towards the design, through an interactive and iterative work with partners, of **an overarching conceptual-methodological framework** for a holistic, multi-actor approach suited for participatory research (the objective of T 1.3). This overarching framework was conceived as referring to a **comprehensive, integrated, democratic and collaborative, as well as reflexive approach**.

The main components of this framework were proposed to the partners for a first discussion in a workshop at the 3rd annual meeting in Vienna, in March 2018. They were asked to reflect on their experience in the DIVERSIFOOD research activities focusing on the main four aspects identified for the multi-actor research approach:

- participation and democracy;
- inter- and trans-disciplinarity;
- multi-dimensionality and systemic approach;
- reflexivity and potential transformative role.

Figure 4 shows the scheme that was used as starting point for the discussion. It illustrates the four components of the approach and their connections with the research process. For this last, the solid arrows showed the implementation of the process through the sequence of stages, while the dotted arrows showed the possibility of adjustments aimed at overcoming the deficiencies emerged in the course of the process.

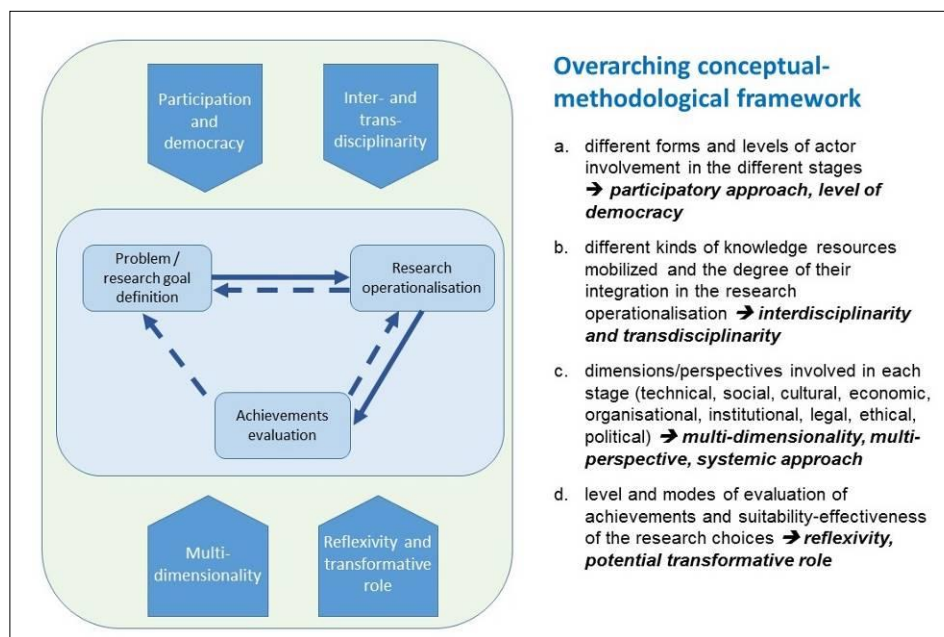


Figure 4: The first draft of the overarching framework presented and discussed at the 3rd AM in Vienna in March 2018.

Table 6 synthesizes the remarks on the four components coming from the four working groups, according to a grid including benefits, difficulties and challenges.

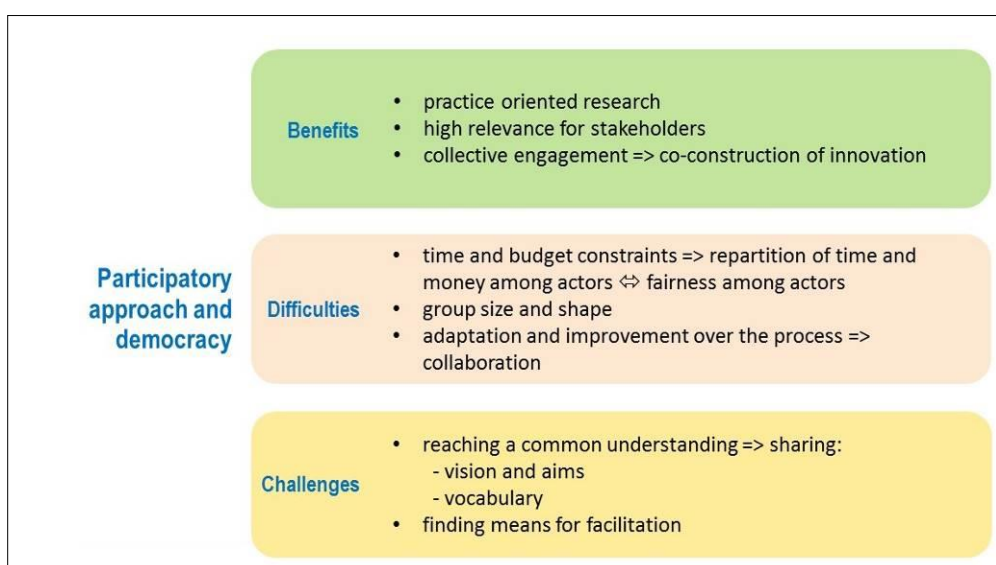
	<u>Gro up</u>	<u>Benefits</u>	<u>Difficulties</u>	<u>Challenges</u>
1) Participatory approach and democracy	1	<ul style="list-style-type: none"> Farmer oriented research Interaction farmer-researcher Provide service to farmers All stakeholders can engage in problem definition/evaluation Fine tuning of design by stakeholders 	<ul style="list-style-type: none"> Application often driven by researchers, less by democracy Different levels of information Farmers not funded in many cases Not so straight forward -> not so predictable outcome Researcher is biased for his interest 	<ul style="list-style-type: none"> For new crops, knowledge of farmers is missing Negotiate different interest of stakeholders at beginning Problem definition/evaluation is ongoing Different "languages" of stakeholders
	2	<ul style="list-style-type: none"> Strong involvement and many meetings and collective decision-makings; explain methods of analysis (takes time, long term investment) 	<ul style="list-style-type: none"> Time and energy investment. How to involve stakeholders in analysis. The initial phase (of e.g. surveys) is often not inclusive, but in a continuous collaboration this can be solved 	<ul style="list-style-type: none"> Give opportunity to understand Optimise length
	3	<ul style="list-style-type: none"> high learning factor co-construction of innovation practice oriented 	<ul style="list-style-type: none"> time constraint and power dynamics budget constraints inefficiency <=> democracy limitations from group size 	<ul style="list-style-type: none"> trust shared vision → shared motivation need for facilitator (changing scale of action) communication large group sizes
	4	<ul style="list-style-type: none"> Relevance for the 	<ul style="list-style-type: none"> We are limited due to the 	<ul style="list-style-type: none"> We need common approaches

		stakeholders is higher, engagement	proposal	to compare results → at local level not democratic
2) <u>Trans-disciplinarity</u>	1	<ul style="list-style-type: none"> Holistic approach Complementarity Closer to market relevance, actors are checks for research goals 	<ul style="list-style-type: none"> Complexity more difficult Endless discussions if different actors are involved More difficult to get funding for larger project To prove that networks of involvement is improved compared to conventional project for different actors including public benefits 	<ul style="list-style-type: none"> Importance of market/food value chain Link different disciplines Unequal distribution of interest Motivate stakeholders along value chain for active participation
	2	<ul style="list-style-type: none"> high level of trans-disciplinarity between farmers and researchers enhanced learning from different views, increase level of awareness 	<ul style="list-style-type: none"> effort to « leave » the own peer group e.g academics and connect to others complexity of operationalising a complex, holistic, research approach 	<ul style="list-style-type: none"> Need of time to understand and respect differences focus on common goals gather stakeholders that are non-classical, « not the usual suspects »
	3	<ul style="list-style-type: none"> sharing of different views more comprehensive/ relevant/ useful results contextualisation 	<ul style="list-style-type: none"> lack of political/ law/ social (anthropologist) scientists different research methods different ways of making motivation power you have to be open to others 	<ul style="list-style-type: none"> Training for sharing knowledge time/ money trust for scientists to work participatory
	4	<ul style="list-style-type: none"> Broader, integrative view, feedback from others 	<ul style="list-style-type: none"> Different languages getting hung up in terminologies 	<ul style="list-style-type: none"> Time consuming, building, common language, concrete definitions, jump into other roles/ realities, patience to do so
3) <u>Multi-dimensionality and systemic approach</u>	1	<ul style="list-style-type: none"> Increased relevance Project is broadly supported More likely to overcome unforeseen difficulties during implementation 	<ul style="list-style-type: none"> Need intrinsic motivation if not all actors are paid Lengthy process, needs sufficient time and money 	<ul style="list-style-type: none"> Strong coordinator/facilitator Process that ensures and maintains coherence Needs true cost accounting to compare with traditional project approaches
	2			<ul style="list-style-type: none"> Reflect on as many dimensions as possible – then make a choice
	3	<ul style="list-style-type: none"> useful/ relevant results better understanding 	<ul style="list-style-type: none"> complex 	<ul style="list-style-type: none"> to systematise multi-dimensional character in a useful way
	4	<ul style="list-style-type: none"> Broader vision more relevant for different stakeholders 	<ul style="list-style-type: none"> Finding coherence 	<ul style="list-style-type: none"> Difficult to find a common focus, easy to lose focus due to complexity of a topic
4) <u>Reflexivity and transformation</u>	1	<ul style="list-style-type: none"> Integration into practice Close cycle to feed into next project 	<ul style="list-style-type: none"> Need to reflect after each cycle 	<ul style="list-style-type: none"> Finances used up, nothing left for implementation Think in long term and continues support with implementation
	2	<ul style="list-style-type: none"> Mutual learning, 	<ul style="list-style-type: none"> Time investment 	<ul style="list-style-type: none"> Adapt an interactive process

		commitment, work and dissemination integrated (for the group collaborating)		and take the time if need be <ul style="list-style-type: none"> • share (choose) common goals (and values) • accept changes of skills needed and objectives occur during the process
	3	<ul style="list-style-type: none"> • good for collaboration • more pedagogic results → knowledge transfer 		
	4	<ul style="list-style-type: none"> • In a diverse group, it is easier to get the necessary distance for reflection 	<ul style="list-style-type: none"> • Project time too short for real reflection and real connection to topics; you cannot continue working. Too short for paradigm shift 	

Table 6: Synthesis of the remarks on the four components coming from each of the four working groups

The schemes in Figure 5 show a synthesis of the elements highlighted in partners' discussions for the four components, according to the three categories of benefits, difficulties and challenges.



Inter- and trans-disciplinarity	<div data-bbox="536 253 1270 409"> Benefits <ul style="list-style-type: none"> • broad/holistic approach • relevance of the research (embedded in the reality) • mutual learning among complementary actors </div> <div data-bbox="536 432 1270 589"> Difficulties <ul style="list-style-type: none"> • greater complexity and its management: <ul style="list-style-type: none"> • lots of differences: people, approaches, methods, languages, power • more difficult funding (than for conventional projects) • lack of some disciplines (political, legal, social) </div> <div data-bbox="536 611 1270 768"> Challenges <ul style="list-style-type: none"> • focus on common goals besides differences • expand the range of actors: different scientists, disciplines, types of stakeholders (unusual for research) • invest on training, motivation building, interaction, good management of time/money </div>
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Figure 5: Synthesis of the elements highlighted in partners' discussions for the four components

The results of the workshop showed a general agreement on the relevance of each of the four components and pointed out positive elements as well as difficulties and challenges associated to their implementation.

Among the benefits, as a whole, partners pointed out those ones associated with complementarity of different knowledges allowed by the active participation of different actors, the mutual learning, the advantages stemming from the close relation between research and practice, the possibility of a holistic approach allowed by combination of different perspectives, knowledge and experiences, and the consequent possibility of multiple responses to problems.

Among the difficulties, partners mentioned time and budget constraints, imbalances of power, inexperience of interaction with certain disciplines that are often not included, difficulty to manage such a complex situation and maintain coherence, and difficulty to manage adaptation and improvement in the course of the project. The negative aspects were attributed in particular to the mismatch between the needs of the real processes and the timing and objectives of the projects. In fact, for all the components of the framework, it was stressed that among the main limiting factors are the short duration of the projects compared to the slowness that characterises the real processes, crucial in case of multi-actor initiatives, and the lack of support once the project is finished.

Among the challenges, which refer to aspects on which to intervene, partners included the building of trust and creating of an inclusive atmosphere to allow open communication and effective collaboration, developing a common language to improve inclusion and mutual understanding, investing on training / motivation building / interaction / facilitation, adopting a reflexive approach accepting changes over the process, and overcoming time limitations.

In greater detail, the following main key-elements, hampering factors (barriers) and enabling factors (bridging elements) were identified from this work with partners:

key elements	barriers	bridging elements
<ul style="list-style-type: none"> - complementarity of different actors and different knowledges - mutual learning - close relation between research and practice - holistic approach allowed by the combination of different perspectives and knowledges - possibility of multiple responses to problems - a research embedded in the reality 	<ul style="list-style-type: none"> - time and budget constraints - need of time, beyond project duration - mismatch between the time needs of the real processes and the timing and objectives of the projects - imbalances of power - lack of all needed disciplines - difficulty to manage such a complex situation and maintain coherence - difficulty to manage adaptation and improvement in the course of the project 	<ul style="list-style-type: none"> - facilitation to ease interaction among different fields of knowledge and action - facilitation to discuss and combine different objectives and expectations - trust building between scientists and practitioners - developing a common language to improve inclusion and mutual understanding - investing on training - reflexive approach and adaptive management of research

The overarching framework was re-presented at the last meeting, in Seville, in January 2019, together with the results of the evaluation made in Vienna. After having presented the entire process of collaborative reflection developed over the course of the project, and thus made all aware of the path of development made, the partners were invited to a final discussion, in order to validate the general framework and to provide the last inputs to finalise it. The discussion was a further important occasion of collective thinking, showing the level of awareness that partners had achieved of the meaning and implications of the multi-actor research approach.

Overview of key-elements, potential barriers and bridges

The collective reflection with the partners has led to identify the following **key elements, hampering and enabling factors in the implementation of holistic, multi-actor approaches** in the research aimed at maintaining and enhancing diversity in farming systems and food chains. They integrate all the insights that partners provided in the course of the project. The following tables show the key-elements identified for each of the four components of the multi-actor approach, the barriers and the bridging elements.

key-elements	
Participatory approach and democracy	Inter- and trans-disciplinarity
<ul style="list-style-type: none"> - participatory approach crucial to reach real democracy in the crop diversity management - participatory approach must empower its participants - complementarity of different actors and different knowledges - bringing together actors from many different backgrounds helps to propose many responses, articulated at many different levels of the society - all participants should be on the same level - variety of knowledge and experience to mobilise - shared decision-making - importance of availability of time and resources - optimisation of experimental design to increase participation - awareness of the possible different involvement of actors depending on the research question/stage - the level of democracy can vary along the participatory process - centrality of mutual learning, allowed by interaction 	<ul style="list-style-type: none"> - mutual understanding among disciplines - existence of trust between scientists and practitioners - interaction for awareness rising of scientists / practitioners' roles in producing knowledge and solutions - choice of methods and tools in relation to the context and to the research question - complementarity of scientists' and practitioners' role - awareness of existence of a variety of methods and tools and the need to choose the most appropriate for the specific research question - need to combine different forms of knowledge (scientific and experiential), in the various fields - need for a common language to share knowledge and experiences - awareness of the possible different mobilisation of knowledges/methods over the research process (different degree of trans-disciplinarity) - different backgrounds allow reformulating the initial questions if they are not accurate

Multi-dimensionality and systemic approach	Reflexivity and transformative role
<ul style="list-style-type: none"> - holistic approach allowed by the combination of different perspectives and knowledges - possibility of a global overview of the diversity - shared vision on the key role of diversity to apply at any level - understand and target all aspects of the question - possibility of multiple responses to problems 	<ul style="list-style-type: none"> - close relation between research and practice: a research embedded in the reality - iterative process between knowledge co-creation and implementation into practices - adaptive management of research (by modifying short-term goals or methods) - maintenance of coherence with principles and goals - reflexivity as basic condition for transformative research - reflexivity to facilitate the participatory research by evaluating both the process and outcomes - external communication/dissemination to allow/complement the transformative role

barriers	bridging elements
<ul style="list-style-type: none"> - lack of a common language/vocabulary and, thus, of clarity on concepts and aspects - difficulty of interaction among people with different backgrounds, points of view, visions - lack/deficiencies of openness to other perspectives - lack of contexts where to interact with diverse people - difficulty to organise participation when the number of actors increases - time and financial resources limitations; need of time, beyond project duration; mismatch between the time needs of the real processes and the timing and objectives of the projects - imbalances of power limiting participation; existence of unbalanced power relations between scientists and farmers - practitioners' greater difficulties with social and theoretical sciences than with applied sciences - dominant "disciplinary" research based on "rationality" needs other knowledge to evolve - lack of some disciplines - a complex and interactive process that depends on motivation and hard work of participants/ actors 	<ul style="list-style-type: none"> - interaction among different actors (e.g. scientists/farmers) - spaces and actions of facilitation to ease interaction among different fields of knowledge and action - spaces and actions of facilitation to ease collective learning - facilitation to discuss and combine different objectives and expectations - practitioners as promoters, involving scientists - building trust between scientists and practitioners - focused learning processes, aimed developing common language and mutual understanding - creating a common narrative to ease mutual understanding and effective interaction - collectively design of the allocation of resources and time needed for the various research activities - investing on training - reflexive approach and adaptive management of research - reflexivity can support to understand complexity of the research problem

<ul style="list-style-type: none"> - difficulty to manage such a complex situation and maintain coherence - difficulty to manage adaptation and improvement in the course of the project - the transformative potential of reflexivity depends on its profoundness 	<ul style="list-style-type: none"> - implementing a collective reflexive approach in order to increase the transformative potential - invest on communication to complement the transformative role - working on communication / dissemination, towards general public, NGOs, CSOs, to make sure we have an echo of the research - transformation is slow and a research project is not enough; transformation needs that policy joins research efforts
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Overall, they confirm the general agreement on the relevance of the four components of the comprehensive approach for multi-actor research - participatory and democratic character, inter- and trans-disciplinarity, multi-dimensional and systemic character, and reflexive character and transformative potential -. Going into greater detail, they highlight positive elements as well as difficulties and challenges associated to their implementation.

Policy recommendations

As a further outcome of the analysis of partners' research work and of the collective pathway of reflection, **some recommendations for policy makers** have been worked out.

Interventions to orient and support research and related facilitation actions are needed, aimed at creating conditions for spreading and strengthening a multi-actor, inter- and transdisciplinary, systemic approach to the issue of increasing diversity in farming and food systems. Based on the characteristics of this approach, this means fostering research projects and organisation of research within institutions:

- building on **multi-actor, context-specific processes**, taking into account the specific needs and characteristics of the agro-ecological and socio-cultural context;
- addressed to create enabling conditions for a **full active participation of the involved actors** (e.g. adopting really participatory methods, overcoming time/budget constraints and power imbalances in decision making, and implementing an adaptive management of the research process to take into account needs of adjustments);
- aimed at investigating **network opportunities and synergies** both at local and broader scales (considering networks as crucial for learning and innovation), and able to enter this network dimension (e.g. participation of researchers in collective organisations outside the research institutions);
- able to catch **all the dynamics** underlying the development and spreading of suitable practices of management of agrobiodiversity, looking beyond just technological or economic aspects, and paying attention to other factors, such as social, cultural, institutional and legal factors, in the local contexts as well as in relation to broader dynamics;
- as much as possible based on **integration of different disciplines and other sources of knowledge** (such as experiential knowledge), beyond sectorial and specialist approaches;



- investigating and supporting functions of **intermediation and facilitation**, and their role in enabling effective interaction and through it bridging different fields and sources of knowledge;
- implementing a model of **research embedded into the reality and aimed at a transformative role**:
 - based on a multi-actor evaluation of research projects and institutions;
 - based on iterative processes between knowledge co-creation and implementation into new practices;
 - open to sharing its achievements outside the research institutions, in order to have them validated socially and to increase their impact;
 - building on collective reflexivity to support its transformative potential.