

CERERE

Cereal Renaissance in Rural Europe: embedding diversity in organic and low-input food systems

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D2.4 – Challenges and bottlenecks

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- 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

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1. Introduction

The objective of this deliverable is to discuss bottlenecks (something to narrow or slow down otherwise successful processes) and challenges (the difficulties to be overcome when trying to fix the 'bottleneck') identified in Task 2.4 in relation to current and future 'seed to fork' best practices with the intention to trigger a technical and policy dialogue involving a wide group of stakeholders.

The identification of bottlenecks and challenges has two main sources: the report of the "Let's Cultivate Diversity" meeting held in Belgium in June 2017 (LLD) and a SWOT analysis contained in low input/organic food systems case studies developed by CERERE partners (Cross reference to the case study deliverable or task). Technical and institutional bottlenecks and challenges emerging from case studies and international events were analysed implementing a problem tree analysis as explained in the next section.

The assessment of bottlenecks and challenges takes into account the diversity of the CERERE consortium analysing 31 case studies distributed as follows: 9 from France, 8 from Italy, 6 from Spain and 2 from Finland, Hungary, Ireland and the UK.

These case studies were analysed by six members of the UD who identified first a preliminary list of bottlenecks and challenges for each case study. Then the most common and important bottlenecks and challenges were identified by comparing different lists in a brainstorming session and a preliminary list of bottlenecks and challenges was compiled (see section 2). Furthermore, the synthesis of the workshops held at "LLD in Belgium" has allowed us to get a better understanding of the bottlenecks and challenges emerged from practical experiences and processes of alternative cereals system in Europe. These contributions focus on the experiences, knowledge and know-how of the peasant networks and associated research in Europe adding value to the knowledge acquired through participatory research conducted on the farm.

2. Implementation of the problem tree analysis

The problem tree analysis (PTA) is a methodology for identifying main problems, along with their causes and possible effects, helping project planners to formulate clear and manageable objectives and the strategies of how to achieve them. Problem tree analysis (also called Situational analysis or just Problem analysis) helps to find solutions by mapping out the anatomy of cause and effect around an issue (EC, 2018)¹. This brings several advantages:

- The problem can be broken down into manageable and definable chunks. This enables a clearer prioritisation of factors and helps focus objectives;
- There is more understanding of the problem and its often interconnected and even contradictory causes. This is often the first step in finding win-win solutions;
- It identifies the constituent issues and arguments, and can help establish who and what the political actors and processes are at each stage;
- It can help establish whether further information, evidence or resources are needed to make a strong case, or build a convincing solution;
- Present issues - rather than apparent, future or past issues - are dealt with and identified;

¹ European Commission: COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL SWD(2018) 285 final, Brussels, pp. 1-57

- The process of analysis often helps build a shared sense of understanding, purpose and action.

Problem tree analysis is best carried out in a small focus group (member of that for example: producers, experts, consumers). It is important that factors can be added as the conversation progresses. The first step is to discuss and agree the main problem(s) or issue(s) to be analysed without worrying if it seems like a broad topic because the problem tree will help break it down. The main problem or issue is written in the upper part of the flip chart. The wording does not need to be exact (it will further be defined), but it should describe an actual issue that everyone feels passionately about.

Next, the group identifies the causes of the main problem - these become the roots - and then the consequences may be identified. These causes and consequences should be arranged in a cause-and-effect logic.

Like any other tree, the problem tree has three parts: a trunk, roots, and branches. The trunk is the main problem. The roots represent the causes of the core problem while the branches represent its effects. The following figure shows an example of a problem tree related to river pollution.

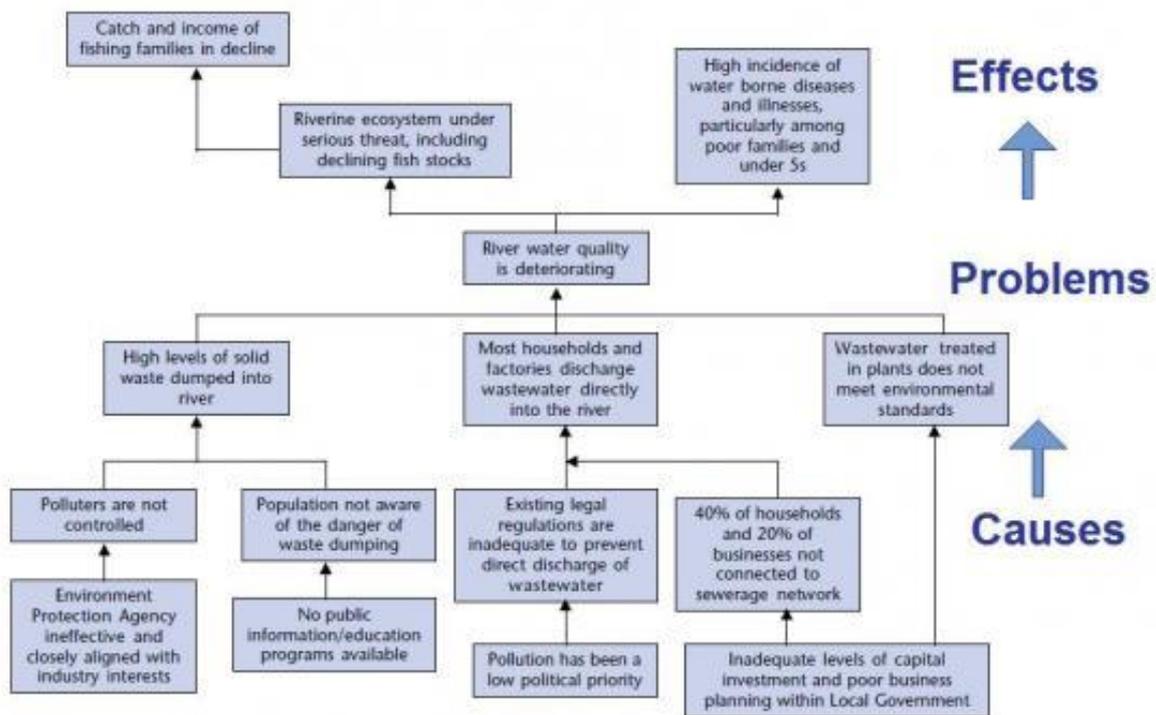


Figure 1: Example of a problem tree. Source: EUROPEAN COMMISSION (2004) in Dillon (2018)²

The heart of the exercise is the discussion, debate and dialogue that is generated as factors are arranged and re-arranged, often forming sub-dividing roots and branches. It's practical to

² Leonellha Barreto Dillon: Problem Tree Analysis (18 November 2018) <https://sswm.info/planning-and-programming/decision-making/situation-and-problem-analysis/problem-tree-analysis>

take time to allow people to explain their feelings and reasoning. Discussion questions might include (ODI, 2009)³:

- Does this represent the reality? Are the economic, legislative, technical, agronomical and socio-cultural dimensions to the problem considered?
- What criteria are important to us in thinking about a way forward?
- Which causes are easiest / most difficult to address? What possible solutions or options might there be? Where could a policy change help address a cause or consequence, or create a solution?
- What decisions have we made, and what actions have we agreed?

Problem trees do more than just identify the root causes of the problem. They provide a visual breakdown of problems into their symptoms as well as their causes, and furthermore create a visual output that can be understood by anyone. However, in the CERERE project we adapt this methodology after collecting the specific bottlenecks and challenges specific for the participating countries, then we sorted them into groups of sustainability, production, and economics, finally we tried to find the most typical ones, they are mentioned in the given tables.

The composition of the bottlenecks and challenges tree has three steps: 1) identification of major bottlenecks and challenges of production and processing of alternative cereal systems in the EU; 2) breaking down of major bottlenecks and challenges to lower level of challenges and bottlenecks; 3) the bottom direct causes (roots) of the lower level of bottlenecks are challenges and identified.

The preliminary bottlenecks and challenges trees were discussed, modified and supplemented by UD researchers with a brainstorming session where three main levels were identified:

1. Agronomic,
2. sustainability production chain and
3. economics.

Lower levels of bottlenecks challenges and their root causes are explained in detail in sections 3, 4 and 5. These finding were validated with a focus group discussion with CERERE partners (when?).

After the identification of main challenges and bottlenecks and their causes and roots, project partners should make suggestions on how to solve them one by one, resulting in a solution tree. This will be done within task 3.2.

³ ODI Toolkit, *Successful Communication, A Toolkit for Researchers and Civil Society Organisations* (2009), <https://www.odi.org/publications/5258-problem-tree-analysis>

3. Focus on challenges and bottlenecks of agronomic sustainability

In this section we present and discuss bottlenecks and challenges related to the agronomic sustainability of low input and organic cereal systems. PTA shows that agronomic sustainability of these alternative cereal food systems clearly depends on the biodiversity of cereals, climate change, and the challenges of modern plant breeding. Via breaking down these challenges and bottlenecks, we get a comprehensive understanding of the views of organizations examined in the case studies. It should be noted, however, that we tried to select the factors which were the most typical ones according to the information received and they cannot be regarded true for all of the participant countries.

Explanations of challenges and bottlenecks related to the agronomic sustainability (Table 1).

Biodiversity

- **Unutilized methods to manage very high potential of diversity:** Various agronomic approaches are necessary to be performed in order to preserve and maintain the different varieties that are being produced.
- **Few varieties:**
 - More cultivars are needed in order to establish and maintain the biodiversity which is envisaged by organic producers. Lack of involvement of structures such as FNAB or local communities to support the management of cultivated biodiversity (France – Fiche descriptive du CETAB).
 - Lack of awareness and agreement on what « participatory breeding » is and how to develop it: key issues: status of varieties: at which stage can a variety be considered « newly created » When will it change its name? Do these « status » changes have an impact on or a link with the terminology used outside the network? vs Participatory breeding of cereals: selection, evolution of varieties and their status. (LLD)
- **Collective organisation to be enlarged to rediscover this diversity:**
 - Significant measures would be necessary in order to raise awareness about the positive aspects of maintaining and improving biodiversity (Spain – Spiga Negra).
 - Towards a multiple use of cereals: suchrye, oats, barley or spelled (adapted to the soil and climate of our regions) offer an alternative to common products (bread, pasta) from imported wheat. The cropping, processing and use of these cereals must be part of strategies to promote local and peasant food structures based on traditional varieties (an enhance of agrobiodiversity). Which alternative uses for minor cereals? (LLD)
- **Genetic erosion:** The replacement of local varieties of domestic plants by other varieties or species that are non-local. Members are contacted by economic operators who wish to capture the value of farmers' varieties only for commercial purpose, without ethical dimensions (France – Petanielle).

Climate change

- **Extreme weather conditions:** The problems caused by the increasingly devastating impact of climate change need to be mitigated (Italy – La Terra e il Cielo cooperative; Italy – Montespertoli).
- **Problems with the less drought tolerant varieties:** Extreme drought is one of the negative impacts of climate change, which is highly problematic in the case of growing cultivars which tolerate dry weather less.
- **Production instability:** Organic and low-input production often results in fluctuating yields due to the exposure to the adverse impacts of climate change (Italy – Domus Amigas: environment and territory self-development).

Modern plant breeding

- **Danger of the GMO and hidden GMO neighboring croplands (in cereals):** More specific regulations would be needed in order to provide protection from fields where genetically modified organisms are being produced.
- **Irreversibility of the polluted traditional varieties by modern varieties based on biotechnologies (no transparency from seed companies):** Strict measures and regulations are of significant importance in order to force seed companies to help protect traditional varieties against pollution by modern varieties.

Major level	AGRONOMIC SUSTAINABILITY		
Lower levels	Biodiversity	Climate change	Modern plant breeding
Direct causes	Unutilized methods to manage very high potential of diversity	Extreme weather conditions	Danger of GMO and hidden GMO neighbouring croplands (in cereals)
	Few varieties	Problems with the less drought tolerant varieties	Irreversibility of the polluted traditional varieties by modern varieties based on biotechnologies (no transparency from seed companies)
	Collective organisation to be enlarged to rediscover this diversity	Production instability	
	Genetic erosion		

Table 1: Bottlenecks and challenges of agronomic sustainability

3. Focus on bottlenecks and challenges of the production chain

In this section we analyse the explanations of challenges and bottlenecks related to the production chain. The challenges and bottlenecks obviously cover the full spectrum of the production chain, starting with seed management and plant breeding for resilience and quality, followed by labour and processing challenges and bottlenecks along the production chain, and finally by research and development ones. It should be noted, however, again, that we tried to select the factors which were the most typical ones according to the received information, they cannot be regarded true for all of the participant countries.

Explanations challenges and bottlenecks related to production chain (Figure 2.)

Plant breeding for resilience and quality

- **Different communities cultivating the same population:** Different obstacles are faced by the communities growing organic/low-input cereals in areas with different endowments. Challenges arising from sharing the rules and defining policies relating to the use of the brand. (UK – ORC Wakelyns Population (OWP))
- **Knowledge-facilitator:** The reconstruction of a knowledge related to milling techniques to agronomic techniques related to cereals for human use (Italy – Spiga & Madia). Loss of peasant knowledge that advances very fast (Spain – Alonso Navarro farm). Financial rewards of the farmers' knowledge (France – Sélection participative du blé dur pour l'agriculture biologique en Camargue et Pays Cathare).
- **Sensibility for weather:** Weather conditions often cause quality changes in the raw materials (Hungary – Biomalom Ltd.). The plant is sensitive to wet and cool weather and soil (Finland – FOPA). Expand the genetic base of basic food crops in order to cope with the increasingly extreme weather conditions (Spain – El Grupo de Acción Compartida (GAC)).
- Other point of views appeared during the RSP Norms and Commons Workshop National Event (October, 2018):
 - Reduction of diversity of practices by norms
 - Norms responding to a huge lack of trust due to industrialization of food production
 - Predominance of norms on practice
 - Fragmentation of vision because of norms
 - Standardization of practices
 - Excessive increase in the number of norms which become impossible to meet

Seed management

- **Availability of genetic resources:**
 - The development in Andalusia of Sub-measure 10.2 on support for the conservation and sustainable use and development of genetic resources in agriculture (Spain – El Grupo de Acción Compartida (GAC). Difficult to update the seed inventory due to decentralized seed management (France – Cultivons la Biodiversité en Poitou-Charente (CBD)). Some farmers come to "consume" seeds without getting involved in the collective plant breeding activities (France - Fiche sur le collectif céréales à pailles de l'ARDEAR Rhône-Alpes). Emergence of speculative tendencies (disproportionate increase of prices)

having direct consequences on small farms for direct sale and indirectly on collective seed systems (Community Seed Banks) (France – Petanielle). Maintaining the collection (seed) is time-consuming (France – Groupement des Agriculteurs Biologistes et Biodynamistes (GABB) d'Anjou).

- The question of seeds used in agriculture hasn't been spared by the phenomena of globalization and standardization in agriculture, to which we can add the privatization and monopolization of the living. As a result, the gradual disappearance of local, reproducible and free from use varieties can be seen. All these varieties result from a small-scale peasant selection in relation with the field context and the different farming methods. This is also accompanied by a loss of autonomy and sovereignty of farmers who see themselves, from year to year, forced to buy their seeds (LLD).
- **Quality management:**
 - Free access studies should be provided on nutraceutical quality of local and traditional varieties to support farmers who are betting on this type of crops (Spain – Spiga Negra). Quality requirements of wheat varieties are restrictive for domestic production and sales (UK – Organic Arable).
 - Challenge: how to enhance the quality of the local/alternative seeds system. What are the basic criteria for seed quality? Germination rate, varietal purity, health and others? What is the effect of terroir on seed quality? How to ensure good quality with limited facilities and equipment? How can we organize to increase the quality of traditional seeds? (LLD)
 - Underlying the relevant link between cultivated diversity management and lack of a clear plant health management system ws. The phytosanitary aspect of seeds: a threat to diversity? (LLD)
- **Organic identity loss:** Dominance of large groups of organic agribusinesses. Organic cereals can't reach economies of scale and there is not enough cohesion in the sector's market. Furthermore, the import market restricts the liquidity of the domestic market. Cereal sector has been underrepresented and neglected at an institutional level e.g. by organic certification bodies; they are more engaged with and influenced by the livestock sector for which it is easier to produce organically and provide provenance than for cereals (UK – Organic Arable). Trend change occurring in the organic market (France – Petanielle).

Labour

- **Conservation:** Responsibility for conservation is unfairly and informally distributed within a company. Lack of involvement of farmers in variety conservation. There is a need to decentralize the conservation of resources, as well as to use them in a dynamic way (France – Groupement des Agriculteurs Biologistes et Biodynamistes (GABB) d'Anjou).
- **No adapted training organisation:** The lack of such organisations is a serious barrier to the emergence of organic and low-input cereal production (Italy – Forno Brisa – Bologna).
- **Time management:** Lack of time for on-farm research. Farmers have been slow to embrace the potential for yield stability over time (UK – ORC Wakelyns Population). Cost and time-consuming of long-distance transportation of equipment (France – Triptolème: de l'observation à l'expérimentation).

- **High average age of farmers:** The ageing of organic and low-input farmers is currently an ever-increasing problem, but the replenishment of young producers is becoming inevitable relatively soon in order to avoid the turmoil of the sector. However, at the same time many of these innovative experiences are promoted by young people (Italy – La Terra e il Cielo cooperative).
- **Low number of skilled employees:**
 - It is nearly impossible to find properly skilled employees for the different positions within the company (Hungary – Agrohungária Kft.).
 - In fact, the interest for the deficiency of skills and for the lack of training dedicated to the issues raised by these cereal systems, should include both the theme of mills and therefore of millers, bakers and technicians - this is well highlighted in several workshops organized in Icd2017-ex. Effect of terroir, wheat varieties and baking practices on the microbial diversity of sourdough and the quality of bread; Economic aspects of seed production: which diversification opportunities for market gardeners? Which tools and rules to collectively handle diversity? (LLD)
- **The involvement of young people within the association was discontinuous:** In connection with the high average age of farmers, the low number of younger producers within the association will soon be a significant problem that needs counter-action as soon as possible (Italy – Domus Amigas: environment and territory self-development).

Processing

- **Standards not adapted (hygiene):**
 - The hygiene standards of milling at the farm are in question: the industrial standards that they would like to impose on them are inappropriate to their practice (France – Collectif Flor de Pèira (accompagné par le Biocivam de l'Aude)).
 - Challenge/opportunity; the industrialisation of the food industry has led to the detriment of the traceability and the quality of the flours. The traditional mills, offering artisanal quality products devoted to short supply chains vs. the renewal of our mills (LLD).
- **Market chains not adapted:** Lack of trading channels and pasta makers. The length of cereal supply chains makes provenance and transparency more difficult (UK – Organic Arable). The supply of flour is problematic (3 different mills to manage) (France – Fiche descriptive de la SCIC l'Odyssée d'Engrain).
- **Quality management (flour):**
 - Difficulties in transforming the flour into a quality final product. The main threat currently in the world of the bakery industry is very cheap products of dubious quality. Beside this, quality requirements of wheat varieties are restrictive for domestic production and sales (Italy – Cumparete).
 - The development of peasant seeds also involves raising the consumer's awareness of the quality of the seed used to make his food. vs the valorisation of products derived from peasant seeds (LLD).

Research and development

- **Financial problems:** Lack of financial resources makes it difficult to create smaller collections of more cultures and data collection also suffers from the lack of resources (France – Fiche sur le collectif céréales à pailles de l'ARDEAR Rhône-Alpes).

Difficulties to manage a collection of peasant varieties (in addition to production and processing): it requires huge human and financial investment, not always financially rewarded (France – Collectif Flor de Pèira (accompagné par le Biocivam de l'Aude)).

- **Lack of research:** There is very limited buckwheat research, the biological features of the plant need more research (Finland – FOPA). Free access studies should be provided on nutraceutical quality of local and traditional varieties to support farmers who are betting on this type of crops (Spain – Spiga Negra). Limited research resources (France – Sélection participative du blé dur pour l'agriculture biologique en Camargue et Pays Cathare).
- **Transdisciplinarity and multi-actor approach (research centres, universities):**
 - The generation of partnerships with researchers and technicians is of great importance as well as involving different research centres and universities that are involved in the tasks of conservation of agricultural biodiversity (Spain – El Grupo de Acción Compartida (GAC)).
 - Several tasks have to be carried out simultaneously: training of young researchers in multidisciplinary and holistic research, raising public awareness which help the assignment for public resources for public research, supporting the internal organisation of networks of farmers to free up time for on-farm research. Joining the evidence of these practices within the broader debate of the agroecological transition of the European agricultural production system promote collaborative action research and global approach to plant health and food quality vs. Participatory research in plant breeding for biological and peasant farms (LLD).
- Other consideration appeared during the RSP Commons and Scientific Research Workop National Event (October, 2018) and the *Durum Wheat Project meeting*:
 - Poor dissemination of participatory research results
 - Lack of resources for farmers in participatory research projects.
 - Institutionalization of the research
 - Scientific publications written in English and with a specialist vocabulary
 - Lack of consideration of the constraints of practitioners in calls for projects (budgets, themes).
 - Failing co-construction: lack of collective decisions
 - Practical uselessness of some results of participatory research
 - Political and economic recognition can lead to standardization of practices and industrialization of peasant seeds
 - Public research collaborating first with the industry
 - *Lack of data on plant adaptation to specific agronomic practices because of the intervention of technicians for sowing and harvesting on the farm.*
 - *Uncertainty of sustainability of the project due to a strong current involvement of researchers*

Major level	PRODUCTION CHAIN				
Lower levels	Plant breeding for resilience and quality	Seed management	Labour	Processing	Research and development
Direct causes	Different communities cultivating the same population	Availability of genetic resources	Conservation	Not adapted standards (hygiene)	Financial problems
	Knowledge-facilitator	Quality management	No adapted training organisation	Not adapted market chains	Lack of research
	Sensibility for weather	Organic identity loss	Time management (lack of time for on-farm research)	Quality management (flour)	Trans-disciplinarity and multi-actor approach (research centres, universities)
			High average age of farmers		
		Low number of skilled employees			
		The involvement of young people within the association was discontinuous			

Table 2: Bottlenecks and challenges of the production chain.

4. Focus on bottlenecks and challenges of economics

Economics might be considered the most critical element of any type of economic activity, so it is necessary to deal with the most important fragments of the economical side of organic and low-input farming. This sub-chapter includes the most typical economic challenges and bottlenecks in this area and their components. Some of them can be regarded similar of other agricultural branches, but there are very specific ones, too. It should be noted that we tried to select the factors which were the most typical ones according to the received information, they cannot be regarded true for all of the participant countries. It can be stated that (1) better utilization of large-scale machineries, (2) informing the decision makers and consumers about the extra value of these products and (3) the quality-promoter legislation plays crucial role in the future expansion.

Explanations challenges and bottlenecks related to economics (Table 3)

Economic sustainability

- **Scale economy problems:** The small sales volumes make it extremely difficult to enter the markets (Spain – Los Portales).
- **Collective machinery:** It is difficult to maintain competitiveness in small-scale with hiring the special machineries, it would be desirable to cooperate with buying and sharing them (Italy – Montespertoli).
- **On-farm research and production should be both valorised:** The Consortium doesn't have any supports from public institutions or bodies to carry on its valorisation objectives, there is a lack of attitude from the research and AKST entities to cooperate with farmers (Italy – Solina (wheat variety)). Industrial standards for on-farm milling are not suitable to farmers' practices (France – Collectif Flor de Pèira (accompagné par le Biocivam de l'Aude)).
- **Access to lands:** Limited access to land (due to natural conditions, or legal system) could make the scale increase impossible (France – Triptolème: de l'observation à l'expérimentation).

Market

- **Accessibility for consumers:** How to reach consumers with the message about the importance of changing consumption habits and the benefits of maintaining a balanced and healthy diet (Spain – El Grupo de Acción Compartida (GAC)). There are difficulties in easily and concisely marketing the 'story'/concept to consumers, as the science behind it is complex (UK – Bwakelyns Population).
- **Lack of information of policy makers and citizens:**
 - Lack of resources for data collection. Lack market information, especially on supply but also on demand side. Limited information on health requirements (France – Cultivons la Biodiversité en Poitou-Charente (CBD)).
 - It is necessary to be able to define the peasant production model in order to distinguish it from the industrial model. The distinction may relate to several criteria: seed origin but also to the size of the farm, sales channels, networking, etc. (LCD vs. The valorisation of products derived from peasant seeds) (LLD).
- **Risk of recovery** by large market chain without ethics: Risks associated with the use of the image of "Flor de Pèira" by operators who do not respect the philosophy of the collective (France – Collectif Flor de Pèira (accompagné par le Biocivam de l'Aude)).

Dependence on public financing: risks for the sustainability of the projects (France – Fiche sur le collectif céréales à pailles de l'ARDEAR Rhône-Alpes).

- **Warranty:** The quantity of available products (Italy – Cumparete). Customers could confuse their products with other lower-quality products claiming use of ancient grain varieties, they need relationship marketing to develop and maintain trust in the producer (Italy – Forno Brisa – Bologna).
- **Few actors understanding the real values of the products:** Establish more participatory action research projects among the different actors involved in the transformation of cereals (Spain – La Artesa).
- **Lack of appropriate marketing support for farmers and initiatives:** Lack of marketing and data management (Ireland – Kilbeggan Organic Foods). The producers are few and economic resources for marketing limited (Finland – FOPA). There are difficulties in easily and concisely marketing the 'story'/concept to consumers, as the science behind it is complex (UK – Bwakelyns Population).

Uncertain competitiveness

- **Inadapted regulations:**
 - Bureaucratic prescriptions and costs are very country-specific and demand extra time and money from the farmers (Spain – Culturhaza).
 - In more general way the topic is recall by two ws at lcd2017: legal aspects of seed production: which diversification opportunities for alternative seeds production farms (LLD).
- **Food prices don't represent the real values of the product:** Food prices don't represent the real values of the product, consumers' attitude is very differential in the markets of the differential countries (Hungary – Agrohungária Kft.).
- **No contributions of ecological value in the cost:** Design communication strategies to convey to the public the interest and benefits of the consumption of this type of handcrafted, ecological and locally produced products (Spain – La Artesa).
- **High contributions of wage to the cost:** In many cases, costs are unrealistic, such as the prices of machinery, materials and paid wages are in cash, but own wages are theoretical. However paid and unpaid wages exposes a significant part of total cost in low-input food systems, their added value is rather high (Hungary – Agrohungária Kft.).
- The role of public authorities is totally underestimated, nevertheless both in the case studies (in Italy) and in the ws in Belgium the importance of public authorities and public policies to support these initiatives has been recalled several times. These represent a bottleneck but above all a challenge. In fact during the dedicated ws in LCD, they have been discussed the role of European Innovation Partnerships (EIP) as an instrument which is supporting several processes of change and social innovation within European rural areas and linked to the topic of CERERE. WS European Innovative Partnerships: what are they? For which purposes? (LLD)

Other considerations appeared during the RSP Commons and Market National Event (October 2018):

- Oppositions within collectives between short food chains and long food chains producers.
- Difficulty in sharing a vision between producers, processors, distributors and consumers
- Lack of financial recognition of plant breeding work and variety research

- Traceability on charge of the producer.
- Unbalance between actors in negotiations within production and marketing circuits.
- Low investment capacity and cash flow problems
- Neoliberal hegemonic market
- Cooperation of the image of the peasant seeds by supermarkets and big companies.

Major level	ECONOMICS		
Lower levels	Economic sustainability	Market	Uncertain competitiveness
Direct causes	Scale economy problems	Accessibility for consumers	Not adapted regulations
	Collective machinery	Lack of information of policy makers and citizens	Food prices don't represent the real values of the product
	On-farm research and production should be both valorised	Risk of recovery by large market chain without ethics	No contributions of ecological value in the cost
	Access to lands	Warranty	High contributions of wage to the cost
		Few actors understanding the real values of the products	
	Lack of appropriate marketing support for farmers and initiatives		

Table 3. Bottlenecks and challenges of economics.

5. Conclusions

The objective of this deliverable was to discuss bottlenecks and challenges identified in Task 2.4 in relation to current and future 'seed to fork' best practices with the intention to trigger a technical and policy dialogue involving a wide group of stakeholders.

The identification of bottlenecks and challenges had two main sources: the report of the "Let's Cultivate Diversity" meeting held in Belgium (LLD) and a SWOT analysis contained in case studies developed by CERERE partners. Technical and institutional bottlenecks and challenges were analysed implementing a problem tree analysis.

These contributions focused on the experiences, knowledge and know-how of the peasant networks and associated research in Europe adding value to the knowledge acquired through participatory research conducted on the farm.

After the identification of main challenges and bottlenecks and their causes and roots, project partners should made suggestions on how to solve them one by one, resulting in a solution tree.

In the first section we presented and discussed bottlenecks and challenges related to the agronomic sustainability of low input and organic cereal systems. PTA showed that agronomic sustainability of these alternative cereal food systems clearly depends on the biodiversity of cereals, climate change, and the challenges of modern plant breeding.

In the second section we analysed the explanations of challenges and bottlenecks related to the production chain. As the analysis revealed, the challenges and bottlenecks cover the full spectrum of the production chain, starting with seed management and plant breeding for resilience and quality, followed by labour and processing challenges and bottlenecks along the production chain, and finally by research and development ones.

In the third section we analysed the most typical economic challenges and bottlenecks in this area and their components. Based on the findings of the problem tree analysis, it can be stated that better utilization of large-scale machineries, informing the decision makers and consumers about the extra value of these products and the quality-promoter legislation plays crucial role in the future expansion.

References

European Commission: COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL SWD (2018) 285 final, Brussels, pp. 1-57

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ODI Toolkit, *Successful Communication, A Toolkit for Researchers and Civil Society Organisations* (2009), <https://www.odi.org/publications/5258-problem-tree-analysis>

Annexes: Challenges and bottlenecks identified in the case studies

Table 1. Challenges and bottlenecks in the case studies of France

FRANCE
<i>Fiche sur le collectif céréales à pailles de l'ARDEAR Rhône-Alpes</i>
Uncertainty about how to continue to develop the project without losing the background.
Lack of common equipment suitable for micro-field operations within the trials.
Uncertain people's availability for facilitation within the group.
Some farmers come to "consume" seeds without getting involved in the collective plant breeding activities.
Reduction of successive grants from the Region.
Dependence on public financing: risks for the sustainability of the projects.
Lack of financial sources.
Economic cooptation by industry, markets and large companies.
The collective is mainly supported by 5 to 6 people.
<i>Cultivons la Biodiversité en Poitou-Charente (CBD)</i>
Uneasy cross-checking individual results (producers free to do the experiments they want).
Difficult to update the seed inventory due to decentralized seed management.
Lack of resources for data collection.
<i>Fiche descriptive du CETAB</i>
Lack of involvement of structures such as FNAB or local communities to support the management of cultivated biodiversity.
Lack of involvement of most members with a decreased collective motivation.
Lack of equipment (harvester, material for storage ...).
Social isolation if the group is unable to perform networking actions.
Funding uncertainties.
<i>Sélection participative du blé dur pour l'agriculture biologique en Camargue et Pays Cathare</i>
The focus is not on adaptation of plants to specific agronomic practices.
Limited research resources.
Financial rewards of the farmers' knowledge.
<i>Collectif Flor de Pèira (accompagné par le Biocivam de l'Aude)</i>
Difficulties to manage a collection of peasant varieties (in addition to production and processing): it requires huge human and financial investment, not always financially rewarded.
Without a differentiated economic valuation of the Petit Gris buckwheat peasant variety (local variety), the producers could prefer the La Harpe variety (INRA Agriobtentation) with lower qualities.
Risks associated with the use of the image of "Flor de Pèira" by operators who do not respect the philosophy of the collective.
The hygiene standards of milling at the farm.
Industrial standards for on-farm milling are not suitable to farmers' practices.

<i>Triptolème: de l'observation à l'expérimentation</i>
Cost and time-consuming of long-distance transportation of equipment.
Problematic access to land.
<i>Petanielle</i>
Members are contacted by economic operators who wish to capture the value of farmers' varieties only for commercial purpose, without ethical dimensions.
Trend change occurring in the organic market.
Emergence of speculative tendencies (disproportionate increase of prices) having direct consequences on small farms for direct sale and indirectly on collective seed systems (Community Seed Banks).
<i>Fiche descriptive de la SCIC l'Odyssée d'Engrain</i>
The supply of flour is problematic (3 different mills to manage).
Quality (color) of the pasta varies according to wheat terroirs origins.
Lack of cultivated surfaces of einkorn, low yields and grinding quality sometimes problematic.
Rise of competition (especially from agri-food industry).
Significant constraints on manufacturing process if officially declared as a mill operator.
<i>Groupement des Agriculteurs Biologistes et Biodynamistes (GABB) d'Anjou</i>
Maintaining the collection is time-consuming.
Responsibility for conservation unequally and informally distributed within the group.
Not optimal storage conditions.
Uncertain sustainability of financing.
Lack of involvement of farmers in variety conservation.

Table 2. Analysis of challenges and bottlenecks in the case studies of Spain

SPAIN
<i>Alonso Navarro farm</i>
Lack of seeds of traditional varieties.
Loss of peasant knowledge resulting from the genetic and cultural erosion that has accompanied intensive agriculture and globalization.
Farmers must be involved in the slow process of recovering cereal seeds.
It is necessary to reach consumption, generating awareness about the benefits provided by this type of local varieties and the processes of artisanal transformation, and relocating agri-food systems.
It is essential to generate economy for agricultural projects.
It is of great importance to finance research projects, as well as the generation of partnerships with researchers and technicians.
The regulatory restrictions on the production and sale of seeds make the work of farmers working for the recovery of traditional varieties very difficult.
The recovery process of cereal varieties is slow, due to the type of crop in question.
The economic viability of these initiatives to recover local varieties of cereals requires sufficient external support.
Genetic erosion.
Loss of peasant knowledge that advances very fast.
<i>Culturhaza</i>
Economic viability, as currently the project is not sustainable.
The price of electricity.
The economic difficulties and the dependence on the electricity supply that generates high production costs. To this is added the bureaucratic difficulties to register the artisanal mill.
Climate change and pollution of adjacent plots and aquifers.
Encouraging more producers to grow spelled and diversify their crops.
Communication and dissemination on the importance of relocating agri-food systems.
<i>El Grupo de Acción Compartida (GAC)</i>
Geographical dispersion.
Lack of farmers with sufficient land area and who bet on cultivating local varieties of cereals.
Essential to add to this project different research centers and universities that are involved in the tasks of conservation of agricultural biodiversity.
How to reach consumers with the message about the importance of changing consumption habits and the benefits of maintaining a balanced and healthy diet.
Reversing the cultural loss associated with food.
The recovery and multiplication of local varieties.
Lost knowledge.
Expand the genetic base of basic food crops in order to cope with the increasingly extreme weather conditions.
The development in Andalusia of Sub-measure 10.2 on support for the conservation and sustainable use and development of genetic resources in agriculture.
The articulation between the phases of production, transformation and consumption is essential for the reintroduction of local varieties of cereals.
Consolidating the demand in the markets for these varieties.

<i>La Artesa</i>
Economic sustainability in the medium and long term.
An additional investment in a larger cart.
The main threat currently in the world of the bakery are the industrial initiatives, which manufacture a very cheap product of dubious quality.
Design communication strategies to convey to the public the interest and benefits of the consumption of this type of handcrafted, ecological and locally produced products.
To achieve greater efficiency in transport.
Establish more participatory action research projects among the different actors involved in the transformation of cereals.
<i>Los Portales</i>
Day to day in a community of more than twenty people necessarily implies a high organizational level.
The realization of cultural and educational activities occupy an important part of the project, and especially the guided tours consume a lot of energy to all the people involved.
The main bottleneck is in the limitations they have because the farm is located in a rustic area, which hinders them when obtaining sanitary permits and register in the Agrifood Industries Registry.
The people involved in the group are of advanced ages.
The legal complications, the bureaucratic obstacles and the demanding requirements to normalize the commercialization of artisan products.
The small sales volumes that handle this type of small-scale undertakings, make it extremely difficult to enter the markets.
To be able to grow their own cereal again. They have their own seeds, and they have enough surface, but they need more people involved to be able to carry out all the work of sowing and harvesting.
To convey to the public the concepts of conscious and healthy food.
<i>Spiga Negra</i>
The economic viability of the project and achieving a balance between production and market.
There is a growing awareness regarding the benefits of the consumption of organic and artisanal products, so that there is increasing demand for this type of products and they are valued more.
Lack of commercial circuits and the human resources available.
They currently have a relatively low commercial capacity. The project has required an important initial investment, so they face the need to increase sales to achieve economic sustainability.
It is essential to establish agreements with the producers in order to provide yield stability.
There are fewer and fewer mills and small flour mills for small producers.
To transform and sell products from local varieties.
To increase the presence of markets of producers in the Andalusian localities region.
Free access studies should be provided on nutraceutical quality of local and traditional varieties to support farmers who are betting on this type of crops.

Table 3. Analysis of challenges and bottlenecks in the case studies of Italy

ITALY
<i>Spiga & Madia: communal management of a wheat supply chain on a local level</i>
Limits of trust, connected to the ability to manage “quality” relations among numerous cooperating figures.
Limits of competence, related to the great mass of information that project operators must manage and control.
Limits of context, in cases where proposals are made in an unfavorable institutional environment (for example, a public agency for which agricultural practices are subordinate components of “landscape policies”).
The administrative / fiscal cycle procedures are a bottleneck that prevents the growth of the project.
The reconstruction of a knowledge related to milling techniques to agronomic techniques related to cereals for human use.
<i>Cumparete</i>
The quantity of available products.
The possibility of bringing more surface area under cultivation for heirloom wheat varieties through regular contracts.
Difficulties in transforming the flour into a quality final product. It is necessary to work on the question of milling.
Product availability and the possibility to have regular contracts and ownership of the land.
Difficulties in developing continuous relations with local institutions.
<i>Domus Amigas: environment and territory self-development</i>
The involvement of young people within the association was discontinuous.
Deepening of the market theme (which? How? At what level of prices?) is very complicated.
Production instability linked to climate change.
The fragility of mutualistic relationships over time.
Low generational turnover within the association.
<i>Grani Resistenti: a business network for the defense of the territory</i>
Limited information on health requirements.
Excessive bureaucratic efforts to support the various bodies that are responsible for health checks.
Inexperience.
Scarce financial resources.
Lack of specific varieties.
Structured marketing plan.
Depletion of group energies.
Policies do not take into consideration the specificity of small productions and transformation.

<i>Solina (wheat variety)</i>
The Consortium doesn't have any supports from public institutions or bodies to carry on its valorisation objectives.
The changed selection pressure on the variety can change the frequency of its characters, ultimately reducing the genetic diversity of Solina.
The economic interest of farmers outside the area of origin can change the genetic composition of the landrace and put farmers of the Consortium out of the market.
It took many years of work to set up the Consortium and convince farmers to act together. This process is very fragile and should be carefully handled.
It is difficult to maintain a collective work within the Consortium when the economic pressure on Solina is so high.
La Terra e il Cielo cooperative
Conventionalization of organic production.
Organic identity loss.
Weak seed management.
High average age of farmers.
Communication of a clear message.
Climate change.
Wild fauna policy is ineffective.
Restricted access to land.
Third-party certification as time and cost-consuming.
Dominance of large groups of organic agribusinesses.
Lack of trading channels.
Montespertoli
Crop rotation is technically challenging.
Current milling capacity is limited.
Lack of pasta makers.
Fair transactions rely only on reciprocal trust.
Wild fauna damages.
Agricultural production is not fully sustainable from the economic point of view.
Lack of farm machinery tailored to ancient grains production methods.
Low fertility soils.
Climate change.
Wild fauna policy is ineffective.
Red tape costs, cumbersome regulations.
Consumer interest for ancient grain may be only a fad.
Forno Brisa - Bologna
Lack of managerial experience.
Lack of capital for investment and staff training.
Inflationary tendency in publicizing use of ancient wheat varieties: risk of a bubble effect.
Risk pertaining to the company's scale of development.
Customers could confuse their products with other lower-quality products claiming use of ancient grain varieties.

Table 4. Analysis of challenges and bottlenecks in the case studies of Ireland

IRELAND
<i>Kilbeggan Organic Foods</i>
Single source of supply.
Contract with only one (or few) miller and baker leaves business exposed.
Shelf life of cookies.
Unable to employ specialists.
Lack of marketing and data management.
Crop failure.
Increased regulation.
Low profit margin.
<i>Sheridans Brown Bread Crackers</i>
Contract with only one (or few) miller and baker leaves business exposed.
Higher retail price compared to competitors.
Brexit.
Dominance of large groups of organic agribusinesses.

Table 5. Analysis of challenges and bottlenecks in the case studies of Finland

FINLAND
<i>The Finnish Landraces Association</i>
Members are rather old.
Commercial activity is „invisible”.
Renewed interest in old cereals.
<i>FOPA</i>
The plant is sensitive to wet and cool weather and soil.
For farmers the plant is new and needs professional communication to expand its cultivation area.
There is very little buckwheat research, the biological features of the plant need more research and organic breeding could support farming.
The relatively weak baking properties need suitable cooking skills.
The producers are few and economic resources for marketing limited.
Farmers have not yet learned to benefit from the plant as it differs from traditional grains.

Table 6. Analysis of challenges and bottlenecks in the case studies of Hungary

HUNGARY
<i>Agrohungária Kft.</i>
The reduction or stagnation of purchase prices in the recent times and the unreasonably and permanently high costs are especially worrisome factors from the aspect of the functioning and successfulness of the group of companies.
The price of cereals and live animals, or even the processed products is often at the prime cost level.
Profit is generated on behalf of dealers.
In many cases, costs are unrealistic, such as the prices of machinery and tools, as well as the contributions and other cost items of Hungarian wages.
It is a fundamental problem that – as opposed to many Western European countries –, Hungarian producers are not the owners of the company purchasing and processing their products, even though it would enable them to gain some profit and their vulnerability would greatly decrease.
It is nearly impossible to find properly skilled employees for the different positions within the company.
<i>Biomalom Ltd.</i>
Weather conditions often cause quality changes in the raw materials.
Miller is among skill shortages areas thus recovering professionals is a real challenge.
Considering processing scale, the company is not able to complete small processing sizes.

Table 6. Analysis of challenges and bottlenecks in the case studies of UK

UK
<i>Organic Arable</i>
Lack of stable market and market information, especially on supply but also on demand side; the only statistics available on organic supply are based on acreage for the previous calendar year, which is not useful for estimating expected yield and providing market information for OA members.
Organic cereals can't reach economies of scale and there is not enough cohesion in the sector's market. Furthermore, the import market restricts the liquidity of the domestic market.
Quality requirements of wheat varieties are restrictive for domestic production and sales.
Lack of seed availability, and non-treatment requirements for organic seed are restrictive.
Cereal sector has been underrepresented and neglected at an institutional level e.g. by organic certification bodies; they are more engaged with and influenced by the livestock sector for which it is easier to produce organically and provide provenance than for cereals.
The length of cereal supply chains makes provenance and transparency more difficult, which is increasingly in the consumer interest and beneficial to communicate for marketing.
<i>Bwakelyns Population (OWP)</i>
Farmers have been slow to embrace the potential for yield stability over time.
The yield stability of the population removes the gamble of picking the initial varieties, although there may be lower yield than the best varieties in any one year– this requires a different approach in farmers attitude to risk, which requires experience and support over the long-medium term.
Need to manage expectations about the characteristics of the crop (e.g. it will not be a pure stand, will have different heights etc.) – this can but does not have to involve changing agronomic practices/machinery, but there needs to be support for farmers switching to growing the OWP.
The trail period for marketing experiment expires in 2018 (although is likely to be extended).
Lack of successful communication of the scientific background of OWP.
The heterogeneity within the crop results in inconsistent characteristics of flour and techniques for use and requires adaptation by millers and bakers to work with each batch of population flour (could be an opportunity).
There are difficulties in easily and concisely marketing the 'story'/concept to consumers, as the science behind it is complex.