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Duration: 4 years

D6.1 Case-reporting protocol

Work Performed by P2 (KU Leuven) and P3 (ILVO)

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1 INTRODUCTION

The aim of task 6.1 is to identify integrated sets of conditions that effectively provide an enabling environment for resilient farming systems in Europe. Task 6.1 will integrate findings from workpackages 2, 3 and 4 on resilience enabling conditions and their impact on the attractiveness of the farming sector and its capacity to enhance adaptive behavior and learning. Conditions will be categorized and linked to resilience outcomes computed in workpackage 5. By linking these outcome values to the combinations of conditions, it is possible to identify which combinations of conditions are likely to improve resilience. The results of task 6.1 will feed into task 6.2 where the identified sets of conditions will be translated into guiding principles for a resilience enabling environment. The purpose of this protocol is to make sure that conditions will be characterized comprehensively and systematically across the various case studies.

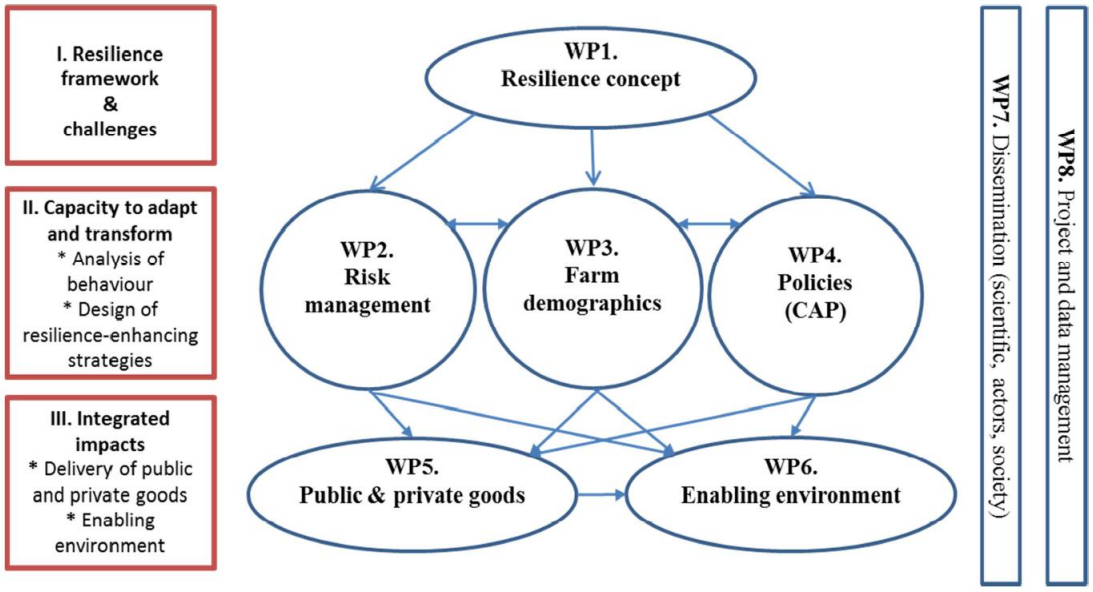

Figure 1 : WP structure of SURE-Farm

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2 ANALYTICAL FRAMEWORK

To analyze how conditions in the enabling environment of farming systems interact with resilience and resilience capacities, we draw on the literature on agricultural innovation systems (AIS). A farming system, as defined in this project, is a system hierarchy level above the farm at which properties emerge resulting from formal and informal interactions and interrelations among farms, available technologies, value chain stakeholders, urban and rural citizens, consumers, policy makers, and the environment (Meeuwissen et al., 2018).

The concept of agricultural innovation systems (AIS) acknowledges that innovation in agriculture—like resilience— is the outcome of an interactive and co-evolutionary process in which a wide range of actors are engaged. Therefore, we assume that this framework can be adapted to study farming systems and the conditions that enable or hinder the resilience of these systems. In SUREFARM, the dynamics of resilience are captured by the concept of adaptive cycles that represent different stages (growth, equilibrium, collapse, reorientation) through which systems pass in response to changing environments and internal dynamics. They take place at multiple levels, that is, agricultural production, farm demographics and governance processes (Meeuwissen et al., 2018). Therefore, studying an enabling environment for resilience warrants a system approach to take into account interdependencies between different levels of these adaptive cycle processes and to fill the gap between an enabling environment at micro and macro-level.

Further, there are different capacities related to resilience, i.e., robustness, adaptability and transformability. This framework is systemic because it approaches the resilience of farming systems in an integrated way, offering insights into the coordination and alignment of system components. Resilience is, however, broader than innovation, as it encompasses all aspects of farms and farming systems, that is, production, marketing and finance. As a result, actors, functions and structures should be interpreted more broadly. In what follows we will refer to Agricultural Resilience Systems (ARS) instead of AIS and to strategies (that is, strategies enhancing resilience—for instance risk management) instead of technology.

2.1 STEP 1: Structural-functional analysis

2.1.1 Actors and structures

The framework consists of three analytical building blocks based on a structural, functional and transformational analysis of an ARS (figure 2). Structural analysis is the central part of the framework and aims to study the structural elements of farming systems in enabling resilience. Structural elements include key actors, their interactions and the infrastructure and institutions shaping these interactions. A first step in this structural analysis block is identifying key actors in

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enabling resilience of farming systems. Key actors include individuals, networks and organisations. According to the resilience framework of SUREFARM, key actors within the farming system boundary are those who influence farms, and, conversely, are also influenced by the farms. In contrast, actors who influence the farming system, but who are themselves scarcely influenced by the system, are excluded.

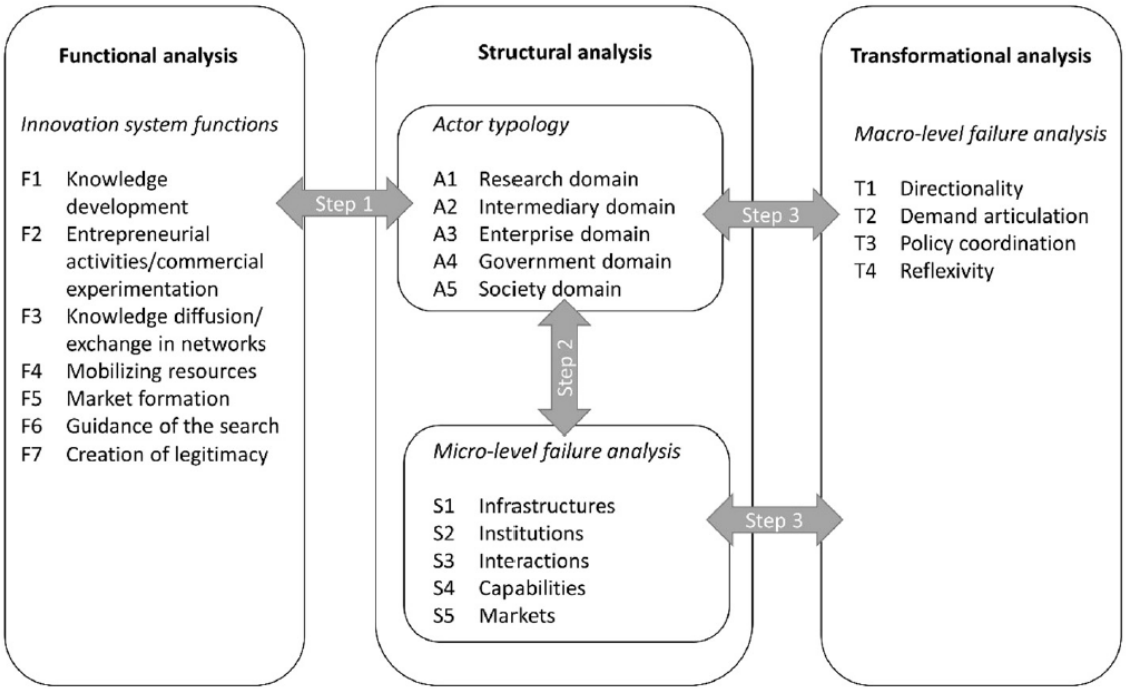

Figure 2: Integrated framework to study ARS

Source : Borremans et al., 2018, based on Lamprinopoulou et al., 2014

According to the framework, these actors are delineated in 5 different domains of actors (individuals, organisations and networks), namely research domain, enterprise domain, society domain, government domain and intermediary domain (Wieczorek and Hekkert, 2012). **The research domain** comprises universities, research institutes, schools and private R&D departments (e.g. from companies or NGOs). **The enterprise domain** encompasses companies ranging from start-ups and small enterprises to multinationals and large firms. It involves the actors in the supply chain, ranging from input suppliers to retailers. **The intermediary domain** contains non-governmental organisations, financial organisations, consultants, knowledge brokers, legal organisations, etc. The **society domain** might include local residents, landowners, consumers etc.

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The **government domain** includes actors involved in government both at local, regional, national and European level.

2.1.2 System functions

Hekkert et al. (2007) described a number of processes that are highly important for well-performing innovation systems. The authors labeled these processes as 'functions of innovation systems'. System performance is then evaluated as the 'functionality' of an innovation system, i.e., in terms of how well the functions are developed within the system. Applying these definitions to the ARS, there are 7 basic 'resilience activities' that resilience actors are engaged in:

- **knowledge development and R&D**: this activity includes both 'learning by doing' and 'learning by searching' and can be mapped by indicators such as R&D projects, investments in R&D, or by the increase in resilience performance indicators.

- **entrepreneurial activities**: referring to the ability of entrepreneurs to use new knowledge, networks and markets or other developments in their actions to generate new business opportunities. This implies that entrepreneurs have the ability to experiment. These can be mapped out, among other things, by the number of new entrepreneurs, the number of entrepreneurs who switch to a new strategy and the number of experiments that are set up with the new strategy.

- **knowledge diffusion/exchange in networks** (AKS, agricultural knowledge systems): this activity focuses on 'learning by interacting' in which all kind of stakeholders exchange knowledge to tailor their activities (policy making, research activities). This way, policy decisions can be tailored to recent developments in research and research activities are tailored to changing user needs.

- **guidance of search**: this function refers to those activities within the ARS that positively affect the visibility and clarity of the needs of the end users or consumers. It includes capturing specific wants and recognizing the potential for change, and showing the direction of search for new strategies, markets, partners.

- **mobilizing resources**: refers to activities mobilizing both financial and human capital, which are essential to all other activities within the resilience system. This might include the provision of funds by industry or government to allow testing and developing novel strategies. The quality of this function may be analyzed by asking key actors to what extent they have sufficient access to resources.

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- **market formation**: commercialization of innovative products and services might ask for specific activities to allow competition with embedded strategies. This function might include actions that create protected space for new strategies such as the formation of temporary niche markets, favorable tax regimes, minimal consumption quotes, etc.

- **creation of legitimacy for the strategy**: refers to activities that counteract the resistance to change that may arise in society when a strategy is introduced. Parties with invested interests may oppose to entrance of new strategies. Actions to overcome this might include lobby actions (for resources or favourable tax regimes).

These functions are very much interrelated. For example, the scale and success of advocacy coalitions standing up to an incumbent regime, to create legitimacy for a strategy, might be directly depending on the available resources and the future expectations associated with the new technology.

2.1.3 Linking functions to actors

This step focuses on the roles of the key actors identified and how the roles of the actors and interactions between actors are shaped through infrastructures. This also includes gaining insights in institutions (formal and informal rules) that govern behavior of the actors and influence the interactions and relationships among actors. Institutions encompass a set of common habits, routines and shared concepts used by humans in repetitive situations (soft institutions), organized by rules, norms and strategies (hard institutions). Answers to a set of diagnostic questions provide a basis for evaluating the role of the different actors in supporting each of the functions. The questions focus on the occurence of a function and the necessity of each actor in supporting this function.

2.2 STEP 2: Analysis of failures at micro-level

The second step focuses on identifying failures at the micro-level, or so-called structural failures. The main idea of failure analysis is based on the integrated analysis of both system functions and structural elements as described above. This is achieved by assessing the performance of the resilience system on whether or not all the functions are being performed properly by the different actors (Hekkert et al., 2007). The reasons why a farming system function is absent or weak can be related to the structural organisation of the farming system and more specifically to actors, interactions, institutions and infrastructure. Therefore, each function is seen through structural elements, namely actors, institutions, infrastructures and interactions within the farming system. At the same time, this failure analysis might be used to seek for mechanisms for alignment and coordination (merits). Answers to a set of diagnostic questions provide a basis for structural failure analysis. Questions in this step focus on the weakness of each actor in supporting

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functions of the agricultural innovation system. These weaknesses are related to the list of structural failures.

These structural failures manifestate themselves at the level of infrastructure, institutions, interactions and networks, capabilities and markets. The first four categories are introduced by Klein-Woolthuis et al. (2005). The concept of market structural failure has been added by Mierlo et al. (2010):

- Infrastructural failures refer might refer to (the absence of) the physical infrastructure needed (such as IT, telecom, machinery, buildings, and roads) and the knowledge (R&D facilities, training systems, expertise) and financial infrastructure (subsidies, grants, incentives from banks).

- For institutional failures, one can distinguish between hard institutional and soft institutional failures. Hard institutional failures refer to failures in the framework of regulation and the general legal system whereas soft institutional failures refer to those related to social institutions such as political culture and social values.

- Network failures can be both the result of too tight networks and rather the lack of linkages between actors. If linkages are too tight, new outside developments might be missed out (blindness). If linkages are too weak, there is unsufficient use of each others complementarities, interactive learning and exhange of new ideas.

- Capabilities failure refers to actors' "capacity to learn, innovate or utilise available resources, to identify and articulate their needs; and to develop visions and strategies" (Wieczorek and Hekkert, 2012). It also encompasses insufficient networking or negotiation skills, and organisational capacity of actors to adapt to and manage technological and organisational innovations.

- Market structure failures refer to the positions of and relations between market parties. Such as a monopoly of the lack of transparancy in the ever enlarging food chains, but also imperfections in the 'knowlegde market' (Klerckx and Leeuwis, 2008).

2.3 STEP 3: Analysis of failures at macro-level

At a later stage, failures at the macro-level were added by Weber and Rohracher (2012) to the initial list of structural failures. The macro-level focuses on the whole resilience system and how the resilience system adapts to emerging challenges. Failure analysis at macro-level aims to

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answer the question whether the performance of the structural elements and functions is sufficiently coordinated, aligned and harmonized by actions at the micro-level. The transformational analysis assesses system failures at macro-level. This analysis focuses on the functioning of the system as a whole and whether it fulfills collective resilience priorities, and if not, what prevents processes of transformative change towards the desirable direction. It adresses the question whether the actions at the micro level are sufficiently coordinated, aligned and harmonized. In this macro perspective, an agricultural resilience system is seen as a nested set of 'systems within systems' and resilience as both an individual and collective act.

Diagnostic questions about the presence, necessity, efficiency and effectiveness provide a basis for evaluating mechanisms for coordination, alignment and harmonization of structural elements at the macro level.

These failures are categorized into four categories:

- Directionality failures are related to direction and setting of collective priorities for transformational change of the system, referring to the lack of shared vision, and inability of collective coordination due to the effect of power on defining any vision.

- Policy coordination failure refers to problems at multi-level policy coordination across different systemic levels e.g. regional-national-European or technological versus sectoral resilience policies.

- Demand articulation refers to learning and anticipating about user needs to stimulate the uptake of resilience strategies.

- Reflexivity failure refers to the inability of the system to engage actors in a self-governance process, by monitoring progress against the transformational goals, and by anticipating on this progress.

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3 OVERVIEW OF SURE-FARM DATA COLLECTION

SURE-Farm has 11 case studies in 11 countries, but data collection differs across the case studies. Table 1 provides an overview of which data collection methods will be used in which cases. Only the data that are potentially of use in WP6 were identified.

Table 1: Overview of data collection relevant for WP6

	D2.1	D2.2	D2.3	D2.6	D2.7	D2.8	D3.2	D3.5/7	D4.2	D4.3/5	D5.2
Belgium	X		X	X	X		X	X	X	X	X
Bulgaria	X	X	X	X	X		X	X	X		X
France	X		X	X	X		X	X	X		X
Germany	X		X	X	X		X	X	X		X
Italy	X	X	X	X	X		X		X		X
Netherlands	X		X	X	X		X	X	X	X	X
Poland	X		X	X	X		X		X	X	X
Romania	X		X	X	X		X	X	X		X
Spain	X		X	X	X		X		X	X	X
Sweden	X	X	X	X	X		X		X		X
UK	X	X	X	X	X		X		X	X	X
All EU MS						X					

D2.1: Farmer survey to identify the determinants of farmers' perceptions on risks, vulnerability and resilience capacities (month 22)
D2.2: Biographical narratives exploring adaptive behaviour (month 22)
D2.3: Focus groups on collective learning and self-organisation (month 24)
D2.6 Data on usage and penetration of actual risk management instruments (month 30)
D2.7 The platform co-creates improved risk management tools/strategies. Focus groups with providers and professional tool developers of risk instruments will be organised in all case studies (month 30)
D2.8 : Drivers of expenditure on the Risk Management Toolkit (month 44). Expenditure data will be collected for all Member States/EU regions adopting the toolkit.
D3.2: Key informant interviews on farm demographics (month 24)
D3.5 and D3.7: In-depth stakeholder workshops on farm demographics and structural change (month 33 and 36)
D4.2: Key informant interviews on CAP (month 18) including workshop in Brussels
D4.3 and D4.5: Regional workshops for bottom-up evaluation of policy effects and for policy improvements. The platform co-creates improvements in policies (D4.5) (month 28 and 30).
D5.2: Participatory impact assessment (month 24).

In addition, the co-creation platform gives perspectives of the financial sector about improved solutions for extreme weather events (D2.4, month 28), gives feedback on survey (D2.5, month 28), co-creates improvements in policies (D3.9, month 37 and D5.6, month 40) and co-creates roadmaps for the implementation of the enabling environment principles (D6.4, month 46).

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In principle, these data collection methods should suffice to provide data on functions, actors and structures in each case study. However, to make sure that this will indeed be the case, carry out a preliminary analysis to match your case study data and the data requested for WP6.

	WP2			WP3		WP4	
	D2.1	D2.2	D2.3	D3.1	D3.2/5	D4.2	D4.3/5
Actors							
System functions							
System structural failures and merits							
System transformation failures and merits							

Send your checklist to WP6 leader Erwin Wauters (erwin.wauters@ilvo.vlaanderen.be) before 30 October 2018.

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4 REPORTING

Reports should be sent to WP6 leader Erwin Wauters (erwin.wauters@ilvo.vlaanderen.be) before month 36.

4.1 Introduction and methodology

Describe what data sources you have used.

List, describe and categorize all relevant actors in the case study according to the five domain types. Indicate how many of these actors were involved in interviews, focus groups and workshops.

Overview table of actors

	Interviews	Focus groups	Workshops
Research and education domain Actor 1 Actor 2			
Intermediary domain Actor 3 Actor 4			
Enterprise domain Actor 5 Actor 6			
Government domain Actor 7 Actor 8			
Society domain Actor 9 Actor 10			

4.2 Linking functions to actors

Name and describe all functions you have identified. Have you identified failures in addition to the ones proposed by the framework?

Describe for each actor how he contributes and how he should contribute to each of the system functions and indicate what aspect of resilience is being supported.

Contribution of actor domains to resilience system functions and their impact

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	Actor 1	Actor 2	…
F1 Knowledge development	R : A : T :	R : A : T :	
F2 Knowledge diffusion			
…			

R = robustness, A = adaptability, T = transformability

4.3 Analyse systemic structural and transformational failures and merits

Name and describe all failures you have identified. Have you identified failures in addition to the ones proposed by the framework?

Evaluate each systemic structural element in relation to the actor(s) involved and to whether they form a barrier or a lever for each of the three resilience attributes.

Contribution of actor domains to resilience systemic failures and merits

	Actor 1	Actor 2	…
S1a Physical infrastructure	R : A : T :	R : A : T :	
S1b Knowledge infrastructure			
…			
T1 Directionality			
…			

R = robustness, A = adaptability, T = transformability

4.4 Final remarks

An example report based on the Belgian case study will be distributed beginning of September 2018, such that the report contents and structure can be discussed at the consortium meeting in Halle (Germany, 18-19 September 2018).

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