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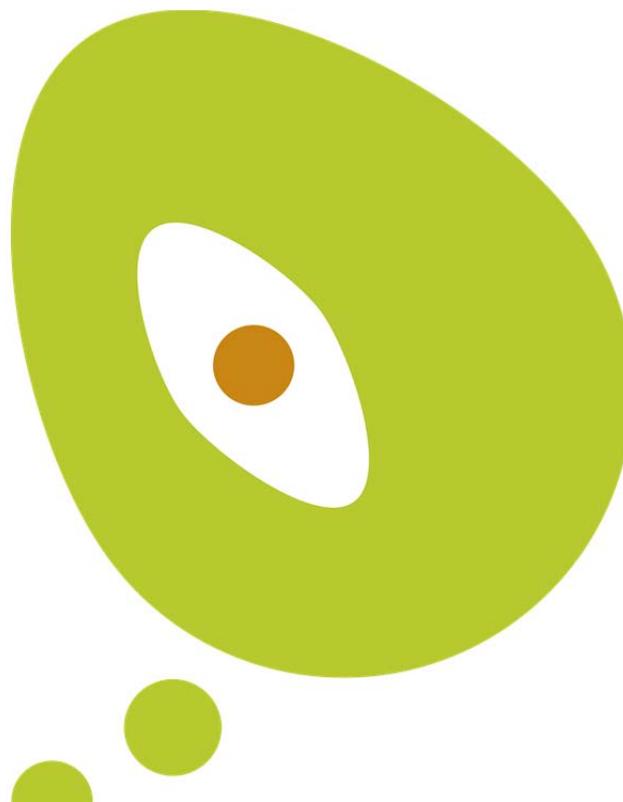
RETHINK

Rethinking the links between farm modernisation, rural development and resilience
in a world of increasing demands and finite resources

Analytical Framework

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Introductory note: *This Analytical Framework builds on the Conceptual Framework (D 2.1). It provides the theoretical framework for the case study analysis, esp. regarding the four key themes (resilience, prosperity, governance and knowledge and learning) in the international comparative analysis (WP4). The ‘case study questions’ are first indications of issues that should be covered in the case studies. However they are not meant to provide detailed guidance, which will be provided in the Case Study Reporting Guidelines (WP3).*

A first draft of the Analytical Framework was prepared for the kick-off meeting in Ghent (24-27 September 2013). The Thematic Leaders of the four core themes were then invited to comment and to expand the description of the theme that they will be leading in WP3. The revised version was sent to all project partners on 2 December 2013. All team members were invited to comment on this revised version. These comments were integrated and the consolidated, finalized Analytical Framework was sent out to all partners by 1 February 2014.

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1. Transversal elements to rethink agricultural modernisation

1.1 Understanding dynamics

In RETHINK we build on **complexity thinking**, which emphasizes nonlinear, context- and contingency-specific interactions. While this frame of reference is increasingly understood, its implications for research and for understanding practical action are rarely taken into account (Rogers et al. 2013). In RETHINK this means that we will focus on a *relational understanding*: rather than one-sidedly privileging states ('being') we need to put more attention on the process ('becoming'). Issues such as environmental sustainability, economic viability, fair prices or resilience need to be examined in their relationality: rather than being static objects or sets of relationships, they emerge from political, cultural and historical processes (McMichael 2009).

As Carolan (2013) points out, this **focus on relationality** is a clear departure from the rather linear trajectory that underlies many conceptual frameworks¹. Indeed, until the 1980s a linear understanding of agrarian change dominated, which ignored issues of historical, spatial and social contingency. In a relational view of the world, causality and explanation lies in the relationships that are formed through the various actors² and the 'enacting' that takes place. It opens up the very real possibility that multiple 'things' are going on simultaneously, different projects pursued by different networks.

The goal of the research is thus less about producing a more accurate representation, than about *identifying new configurations that challenge conventions*, that are in the process of **rethinking farm modernisation**, of making new agro-food chains possible and new practices doable, of opening up new modes of thinking. It will contribute to making diversity more visible, thus increasing the space of decision (Gibson-Graham 2008). Our goal is thus not to explain why farmers are 'locked-in', but to uncover the possible, to explore how modernisation could be rethought. While highlighting the wide variety of practices on-farm or networks in a region may not automatically produce new ways forward, it may generate new possibilities and suggest different strategies.

Looking at these configurations and how they emerged from a specific context and history, will allow underlining the *contingency* (rather than the linear inevitability) of any specific 'development'. It will allow capturing diversity of farm types and of models of engagement with the market, as well as how these models interact in a territory. We will highlight what barriers they face and how they seek to overcome them. We will analyse how these models redefine (implicit) assumptions and values.

This **non-deterministic approach** allows coming to grips with heterogeneity and allows the inclusion of actors and agency (van der Ploeg et al. 2008). It builds on an understanding that structures do not determine action; rather structure is understood as multiple, contingent, variable and actor-dependent. Similarly, actors face a range of routines, vested interests, shared expectations that they have to deal with, without being completely governed by them. This does not deny the relevance of wider patterns within

¹ For example, the debate around the 'conventionalisation' of organic agriculture has shown that what is often framed as a 'grand binary', can be replaced by possibility and multiplicity. This requires taking a more reflexive, situated and relational approach, thus questioning the arrow of linearity and the implied inevitability (Carolan 2013).

² Including researchers! As Campbell and Rosin (2011) show, the engagement between a research team and diverse actors enabled a whole new set of theoretical questions that opened up new areas of politics, contestation and elaboration of commercial forms of organic agriculture.

which a farm or region is embedded; what is crucial is how these wider patterns are perceived, translated, faced, mediated and countered (van der Ploeg et al. 2008).

We do not understand change as the result of one single logic that necessarily unfolds into one unified trajectory. Rather, on one farm or in one region, there are many different and often mutually contrasting development projects. Each project builds on a particular resource combination, involves particular actors, implies specific interrelations, follows particular directions and relates with interests in specific ways. The interrelations between these competing projects can provide a complex, and often unstable interplay.

Case study questions: How will you capture the diversity of projects that are present in your case study area? Will you focus on one specific coalition of actors and their project? Which time-scale are you going to take into account?

1.2 Networks: within a territory and along food chains

In RETHINK the case study analysis will in most cases be performed at both the farm-level and the community/territorial level. The **boundaries** of the territory will depend on what spatial scale the actors perceive as being relevant (i.e. it does not need to fit with administrative boundaries). For example, the spatial scale might be linked to the perimeter of action of a dairy. If the 'territory' refers to actors along a food chain, the territorial level may not necessarily refer to a contiguous space.

Taking a territorial approach also means that the analysis will include other actors of the territorial agri-food system such as extension services, local authorities and the civil society. The challenge will be that different actor groups (e.g. environmental protection, administrators, collectors and processors) are likely to consider different boundaries as relevant.

Taking into account the territorial level allows capturing **networks** such as cooperation between farms (e.g. sharing machinery) and collective measures (e.g. irrigation infrastructure, social learning, marketing). The territorial level will also allow capturing different types of diversity (e.g. individual farms might specialize, but in different areas, thus still keep high level of diversity at regional level). We will strive to consider the whole range of relevant initiatives in a given territory, and capture the changes and interactions within and between them (Lamine et al. 2012).

The analysis of networks might include:

- *interdependencies within a territory*, such as the interactions between local networks, cooperation between farmers (diversification at territorial level, not just at farm level), cooperation with regional stakeholders, interaction between agricultural and non-agricultural population.
- *interdependencies along the food chain*, e.g. taking into account the strategies of processors, retailers, consumers; producer-consumer relations; drawing attention to social issues, e.g. is there any discussion about what is a fair price for farmers and other stakeholders? What mechanisms are used to coordinate the actors along the chain?
- *interdependencies between institutions*, e.g. policy makers, research, extension services, Chamber of Agriculture, (dominant) Farmer Unions, farmer associations, public authorities, civil society. Are there new actors emerging? Are there relevant public policies? Are collaborative efforts encouraged, e.g. through coordination platforms?

The spatial scale of the analysis needs to be clearly identified, not least because it is likely to impact the results relative to the four themes. For example, looking at resilience

might well lead to different insights if assessed at the farm-level (the disappearance of that farm indicate low resilience), or at the regional level (the disappearance of a farm might enable a restructuring), or if the focus is on the resilience of a specific type of production in the region (e.g. horticulture and how it has changed and adapted).

Case study questions: How will you choose the boundary of your case study? Which relations, which actors will you include? As you might not be able to study all networks in the same level of depth, how will you decide which to focus on and which to exclude?

1.3 From efficiency to effectiveness

As was briefly reviewed in the conceptual framework, farm modernisation was driven by the search for **efficiency**, which mostly refers to the notion of production efficiency in neoclassical micro-economics. Production efficiency has two components: technical efficiency (i.e. the input/output relationship) and allocative efficiency (i.e. the point of the production function where marginal benefit equals marginal costs). Increasing the *technical efficiency* has been the target of much of the research in agricultural sciences (animal production, crop sciences) so as to increase the production per animal or per hectare of land. The *allocative efficiency* has played a role especially in relation to labour and capital. As a result of this understanding, efficiency is often seen as synonymous with economies of scale. Increase in the economic efficiency of farms has become a goal in itself, i.e. a more efficient farm or production method is always 'better'.

In rethinking modernisation, we need to *question this prevailing conception of efficiency*. For example, industrial agriculture's exceptionally high levels of productivity per unit labour, plant and animal go together with various unaccounted, 'externalised' costs. If these were internalised, other agricultural models might be more 'efficient'. Also, a very different conception of efficiency would emerge if agricultural systems were designed with goals such as minimizing greenhouse gas emissions, the toxicity of inputs or agriculture's footprint on the landscape. Or if they were designed with goals such as maximizing soil conservation, providing space for wildlife habitat and human recreation. Including these goals would lead to a much greater range of measurable costs and 'outputs' thus shifting the assessment as to which farming system is most 'efficient'.

This might be achieved through **redefining** which production processes are 'efficient' (e.g. in view of animal welfare, a shift from milk/cow/lactation to milk/life of cow). It might also be achieved by a more comprehensive definition of the inputs and outputs produced (as done e.g. in life cycle analyses). It might also require the inclusion of ethical aspects in economics, e.g. taking into account the responsibility of the producers for the ecological integrity of their land.

Furthermore, the question is not only whether a farming system is 'efficient', but also whether it is adequate to accomplish purposes beyond production (e.g. protection of ecosystem services, climate change mitigation, prosperous rural areas), i.e. whether it is **effective**. The question then shifts from the efficiency of a specific production process to the effectiveness of this type of farming to achieve societal goals.

In a broader context, given that resources are limited, the question is also whether a farming system should contribute to '*sufficiency*', i.e. accepting that in many areas 'growth' cannot be pursued for ever, and that we need to reduce the consumption of materials and energy. Indeed, we need to focus on agro-ecological innovations, and on social innovations such as a different organisation of supply chains and behavioural changes to reduce material consumption, to protect the environment and be able to meet the world's food demand in 2050 (Freibauer et al. 2011: 20, Sekulova et al. 2013). There is thus not only the question of the 'efficient' use of resources, and of the

effectiveness of farming systems to contribute to societal goals, but also the fact that many of these resources are limited. The question is thus whether the case study shows creative ways to address limits.

Case study questions: How will you define efficiency in your case study? What criteria do stakeholders use? What values underlie these conceptions? Are there elements that indicate a shift towards effectiveness and sufficiency?

1.4 Appreciating transformative diversity

Diversity in all its forms can be seen as a ‘*resource pool*’, whether in the development of technologies, products, strategies and competences. It is seen as a major factor in fostering of innovation and the principal means to mitigate the effect of ‘lock-in’ in terms of technological trajectories. It is also a potentially effective response to some fundamental problems of social choice, as it allows accommodating different interests and values typically associated with modern pluralistic societies (Stirling 1998).

However, the notion of diversity tends to be ambiguous, not least because it is used differently by different disciplines. To clarify the ambiguity, Stirling (1998: 39ff) proposes **three properties** of diversity: *variety*, which refers to the number of categories into which the quantity in question can be partitioned; *balance*, i.e. the pattern of apportionment of that quantity across the relevant categories; and *disparity*, which refers to the nature and degree to which the categories are different from each other.

Furthermore Stirling (1998) points out that the issue is not simply a matter of the diversity of options, but also the degree to which they are **interconnected** in the overarching techno-economic and socio-cultural networks. Indeed, there may be synergies between some options, or certain options might be mutually incompatible, with the performance of one reducing the performance of the other.

If harnessed, diversity can strengthen adaptive capacity as it enables the reconfiguration of resources and thus the ability to take advantage of opportunities as they arise. It can also contribute to building knowledge **networks** that foster social learning and innovation, that create opportunities for cooperation between a range of rural stakeholders (e.g. care farming, direct marketing, recreation). However, this is only possible if there are *complementarities* and mediators at the territorial level, which allow for and facilitate such synergies. In other words, diversity needs to be harnessed through integration, diversity needs coherence, it needs coordination. Indeed, links and connections are key in complex systems.

Within a territory, diversity is also likely to cover some elements of the ‘eco-economy’ and some of the ‘bio-economy’ (Kitchen and Marsden 2011). While the two paradigms may be conceptually opposed, in practice it is likely that the various eco-ecological strategies and practices will be co-evolving with the bio-economic model. The **balances and contestations** between them will be partly conditioned by their own internal logics, and partly by how consumers and government bodies react to their diverse expressions in space and time. The question is then how the relationships and contestations driven by diversity play out in various rural areas.

Case study questions: How do farmers manage and valorise diversity (on their farm, in their region)? How will you capture diversity? Can you test empirically whether diversity benefits farms and rural areas in your case study? How will you compare the benefits from diversity with the benefits of specialisation?

2. The case studies and the four core themes of RETHINK

Four core themes (resilience, prosperity, governance, knowledge and learning) will structure the international comparative analysis in WP4, and thus need to be taken into account during the national-level analysis of the case studies (in WP3). The aim is to rethink farm modernisation and to identify factors that enable and encourage the creation of synergies between farms and rural development, thereby contributing to rethinking modernisation.

Table 1: Indication of the extent to which each team will contribute to the four core themes (source: Minutes of the Kick-off meeting held in Ghent in Sept. 2013).

	Short title of case study	Resilience	Prosperity	Governance	Knowledge/ Learning
DE	Eco-economy	xx	xx	xx	xxx
AT	Organic farming and resilience	xxx	o	o	xx
BE	Multifunctional land use: Alternative financing mechanisms	x	x	xxx	xx
CH	Sub-urban agriculture and food procurement	xx	xx	xxx	x
DK	Strategy making	xx	x	xxx	xx
ES	Intensive vegetable production	xxx	xx	xx	x
FR	Fruit and vegetables production	xxx	x	xxx	x
IE	Nutrient management in grass production	xx	xx	o	xxx
IL	Water efficient crop production	xx	x	x	xx
IT	Alternative pig production	xx	xx	x	xx
LT	Challenges and opportunities in farmers' markets	x	xxx	xx	x
LV	Small scale farming	xx	x	x	xxx
SE	Land use changes and ecosystem services	xxx	x	x	x
TR	The role of farming organizations	xx	x	xxx	xx

The four core themes are:

- Building on social-ecological **resilience**, we will pay particular attention to the role of diversity. The aim is to identify process of diversification and adaptation of agricultural practices to meet the local social and ecological conditions.
- In the framework of **prosperity**, we will explore the shift from a focus on costs of production, productivity and cost-efficiency towards effectiveness. We will explore the integration of agriculture with other economic and non-economic functions in the agricultural landscape so as to promote synergies and integrate socially fragmented communities.
- With the shift of the role of the state from 'provider' to 'enabler', innovations in **governance** will be analysed as to their ability to achieve balanced rural development. Among other, we will assess the potential of partnerships with private and voluntary sectors and of flexible alliances and networks. Particular

attention will be paid to ways to mobilize actors so that they are in a position to develop strategic agendas collaboratively.

- We will explore the role of social **learning** and of different **knowledge** bases. We will assess how knowledge is accessed and generated to advance agriculture and its positive linkages with rural development. Particular attention will be paid to the role of networks for innovation (esp. in the light of European Innovation Partnerships).

We are well aware that the four themes interact (e.g. locally-adapted and flexible governance structures may enhance resilience, esp. adaptive capacity; and redefining prosperity might be essential to achieve social-ecological resilience); and they may overlap to some extent (for example: resilience heavily depends on learning). Also, while not all case studies will contribute to each of the four themes in equal depth, it seems desirable at this stage that each case study considers the implication of their analysis for each of the four themes.

3. Resilience

Resilience, in its everyday meaning, refers to the ability to recover readily from adversity, i.e. to rebound or ‘bounce back’ (Alexander 2013). Within various scientific domains, resilience has evolved into conceptual frameworks for understanding how complex systems (e.g. an ecosystem, a community) buffer shocks and change over time³. The focus is thus always on the interplay between persistence and transformation; emphasizing non-linear dynamics, uncertainty and surprise.

Resilience is a term that has risen in popularity with policy makers in the last couple of years, based on the recognition that social systems need to be able to cope with change. The term is also attractive due to its ambiguity and fuzziness, so that it may be used to convey superficial coherence between essentially opposing interests. This confusion is fuelled by the debate in how various authors define ‘resilience’, and how it overlaps with (or includes) terms such as ‘robustness’, ‘adaptability’, ‘transformability’ and ‘vulnerability’.

3.1 Social-ecological resilience

The scientific concept of resilience in ecological sciences owes much to the theoretical work of C.S. Holling (1973), which was later refined by various researchers of the ‘Resilience Alliance’⁴. They build on the concept of the **social-ecological system** (SES), which is a system that includes societal and ecological subsystems in mutual interaction and can be defined at any scale, from a farm, a local area, to regional and global (Berkes and Folke 1998, Gallopín 2006). The concept of the SES “reflects the idea that human action and social structures are integral to nature and hence any distinction between social and natural system is arbitrary” (Agder 2006: 268).

In the context of social-ecological systems **resilience** has been defined as “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks” (Walker et al. 2004: 4). While this definition may be somewhat abstract, its meaning has been

³ The existing literature on resilience spans several disciplines, e.g. psychology, regional sciences, planning, management, and literature on community resilience. However these are not reviewed here.

⁴ See: www.resalliance.org

specified by distinguishing three aspects of resilience: persistence, adaptability and transformability (Walker et al. 2004, Folke et al. 2010)⁵:

- *Persistence* refers to the ability to buffer shocks and still maintain function, i.e. resistance to change and conservation of existing structures, in this it is akin to ‘bouncing back’ after a disturbance. In this sense persistence is similar to robustness⁶.
- *Adaptability* refers to the ability to deal with challenges, including uncertainty and surprise. It implies the capacity for renewal, re-organisation and change, the capacity to learn, combine experience and knowledge, to adjust responses to changing external drivers and internal processes. The focus is on continuing to develop within the current stability domain, within the current regime.
- By contrast, the concept of *transformability* refers to radical change, i.e. the capacity to create a fundamentally new system when ecological, economic or social structures make the existing system untenable. Transformability thus refers to the ability to steer away from undesirable trajectories, innovate and steer towards trajectories that sustain and enhance ecosystem services, societal development and human well-being. Transformational change thus involves a change in the nature of the system, e.g. through the introduction new defining variables. For example when a farm shifts from production-only to multifunctionality, or when a region moves from an agrarian to a resource-extraction economy. Transformational change often involves shifts in perception and meaning, in social network configurations, in patterns of interactions among actors including power relations and associated institutional arrangements. Generally, systems with a high transformative capacity are more likely to be able to deliberately initiate transformational change.

In other words, in the context of SES, resilience means more than the ability to recover from disturbances, it includes adaptive capacity (Walker et al. 2002) and transformative capacity (Walker et al. 2004). These three aspects of resilience are helpful to better illustrate the range of behaviours that are required for a system to be able to remain ‘dynamically stable’. They also explain why it is not always clear what is meant when it is said that a system is ‘resilient’ as one or several of the three aspects might be dominant and impair another (e.g. a high buffer capacity might delay transformational change, so that a ‘window of opportunity’ is missed). The key is thus for a system to be able to display all three aspects, and implement one or the other when it seems most appropriate.

Resilience implies active capacity building. Thus, the **learning** component is central in resilience, esp. for the ability to restructure the system in response to disturbances. This includes both individual and social learning, as deliberation is often a critical process for a resilient system (Lloyd et al. 2013). Davoudi et al. (2013) have thus proposed to add learning to the resilience as a conceptual framework, not least to highlight the fact that

⁵ These three aspects of resilience could be linked to different kinds of learning (Argyris and Schön 1978): ‘persistence’ can be linked to ‘single loop learning’ in which there are incremental improvements of established routines; ‘adaptability’ can be linked to double-loop learning characterised by a process of reconsidering underlying assumption, i.e. the interpretive frames are questioned; and ‘transformability’ can be linked to triple-loop learning where values and beliefs are reconsidered and thus the context of choices redefined.

⁶ Robustness is a term often used in a different context, esp. in disaster recovery literature, where it is understood as the opposite of vulnerability (e.g. Anderies et al. 2013). In this context, robustness is often discussed in relation to cost-benefit trade-offs associated with systems designed to cope with large (but infrequent and uncertain) shocks. Other works in the context of disaster preparedness and environmental hazards (e.g. in the context of climate change) pair vulnerability with adaptation and adaptive capacity of communities (e.g. Smit and Wandel 2006).

the dynamic interplay between persistence, adaptability and transformability is not deterministic, but allowing humans intervention through technologies, ingenuities and foresight (Fig. 1). This four-dimensional framework suggests that in the face of either sudden or slow burning disturbances, complex adaptive social-ecological systems can “become more or less resilient depending on their social *learning capacity*” (Davoudi et al. 2013: 311, emphasis in original).

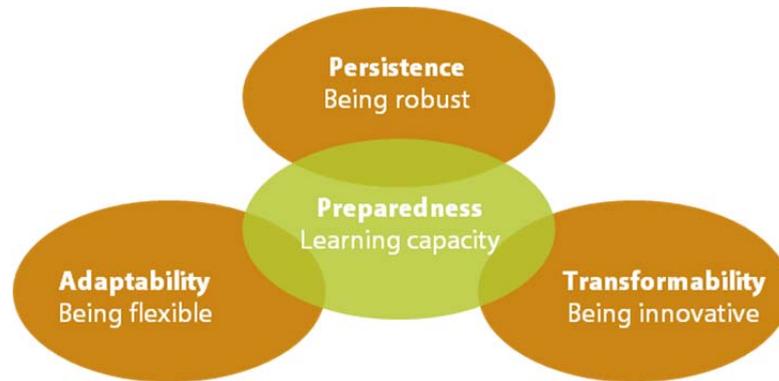


Figure 1: The three aspects of resilience linked by learning (Source: Davoudi et al. 2013:311)

It might be important to clarify that **disturbances** are not necessarily seen as ‘negative’ events. Indeed, a shock might open up opportunities for reevaluating the current situation, trigger social mobilization, recombine sources of experience and knowledge for learning. As such a crisis can be a ‘window of opportunity’, which might enable transformative change. Both at farm and at territorial level, different types of disturbances (distinct in predictability, amplitude, and duration) will require different strategies to ensure resilience (Darnhofer et al. 2010). It is also important to keep in mind that shocks and stresses may stem from a shift in actors’ understandings of the system, or from shifting conditions in the systems (Scoones et al. 2007: 38).

Folke et al. (2003) have identified four **critical factors** that interact across temporal and spatial scales that seem to be required for dealing with dynamics:

- (1) *Learning to live with change and uncertainty* (i.e. not shying away from disturbances but seeing them as an opportunity, learning from crises, and ‘expecting the unexpected’).
- (2) *Nurturing diversity* for reorganisation and renewal (spreading risk and creating buffers, seeing diversity as providing a bundle of components that enable innovation following a disturbance, as providing a frame for creativity and adaptive capacity).
- (3) *Combining different types of knowledge for learning* (i.e. draw on diverse reservoirs of practices, institutions, values, worldviews; combine experimental and experiential (social) learning, building process knowledge into institutions).
- (4) *Creating opportunity for self-organisation* (recognizing the interplay between diversity and change, dealing with cross-scale dynamics and how institutions create cross-scale dynamics).

Other authors have proposed more detailed but similar lists. For example Biggs et al. (2012) propose seven generic principles for enhancing resilience of ecosystem services in the face of disturbance and ongoing change: maintain diversity and redundancy, manage connectivity, manage slow variables and feedbacks, foster an understanding of social-ecological systems as complex adaptive systems, encourage learning and experimentation, broaden participation, and promote polycentric governance systems.

3.2 Resilience and vulnerability

A term that might be important to clarify (esp. in relation to resilience) is vulnerability. Generally, in the social sciences, **vulnerability** is the state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt (Adger 2006). Vulnerability is usually described by three elements: (1) exposure to stressors, (2) sensitivity to these stressors (thus defining the potential impact) and (3) the coping capacity or capacity of response. The coping capacity is the potential to implement adaptation measures so as to avert the potential impacts. The coping capacity depends on awareness, ability and action, and is dependent on the stock of assets or ‘capitals’ (economic wealth, technology, information, skill, infrastructure, institution, social capital, etc.) actors dispose of. For agricultural production vulnerability has always been linked to bio-physical conditions. These will include soils, climate, relief, and natural drainage and in areas with marginal conditions agriculture will – everything else being equal – be more vulnerable than in areas with favourable ones. The concept of vulnerability has been a “powerful analytical tool for describing states of susceptibility to harm, powerlessness, and marginality of both physical and social systems, and for guiding normative analysis of actions to enhance well-being through reduction of risk” (Adger 2006: 268)

The relationship between vulnerability and resilience is not well articulated and contested (Cutter et al. 2008). A number of authors (e.g. Gallopín 2006, Miller et al. 2010) see resilience and vulnerability as **two related yet different approaches** to understanding the response of systems and actors to change (with resilience originating in ecology and emphasizing ecological-biophysical dimensions; and vulnerability originating in social sciences and emphasizing social-political dimensions). These authors propose terms such as ‘robustness’ as the antonym of vulnerability, and resilience as a separate concept (i.e. there is high/low vulnerability, which may or may not be linked to high/low resilience). Indeed, Reghezza-Zitt et al. (2012: 33) point out that in the context of disasters it is possible “to be vulnerable to an impact while being perfectly resilient”, as indeed, a city might be affected by a disaster (hence it is vulnerable), yet manage to rebound and reconstruct fairly quickly (hence being resilient). They even point out that it may be because a society or a territory is vulnerable that it will suffer crises, and that it will have to bounce back, adapt and learn from the disaster, thus potentially strengthening resilience (Reghezza-Zitt et al. 2012). Other authors (e.g. Adger 2000: 348) see vulnerability as a loose *antonym* of resilience (i.e. vulnerability and resilience are at opposite ends of one spectrum). For example, Folke (2006: 262) states that “a vulnerable social-ecological system has lost resilience”, thus clearly linking the two terms as antonyms.

However, the discrepancies in definitions and understanding may be due primarily to **reinterpretations** by one research community of terms used by another research community, using their own language and invariably situating their own concepts on a higher ground and the other’s as derivative (Miller et al. 2010). Indeed, both the ‘**resilience community**’ and the ‘**vulnerability community**’ focus on understanding the response of systems and actors to slow creeping changes, shocks and surprises. But while interpretations of vulnerability within the resilience community tend to focus on the physical vulnerability of ecosystems, the interpretations of resilience in the vulnerability community tend to stress social aspects such as networks, access to assets and learning (Miller et al. 2010).

However, as Gallopín (2006: 301) points out, while the specific nature of the relation between vulnerability and resilience is not obvious, they are both **related properties** of an SES. Indeed, vulnerability, resilience, adaptive capacity, and robustness are “different

manifestations of more general processes of response to changes in the relationship between open dynamical systems and their external environment. This suggests that an interesting and useful line of research could be represented by the investigation of the general dynamics of change in SES” (Gallopín 2006: 302)

Also, the conceptual fuzziness is not necessarily negative, as it fuels debate and innovation and is part of any process of conceptual development.

3.3 Resilience and social sciences

Social-ecological resilience builds on the understanding that ecosystems and the social systems that use and depend on them are inextricably linked, so that the **feedback loops** among them determine the overall dynamics. Yet, the focus in most of the literature on social-ecological resilience is on the resilience of the ecosystem. Characteristics of the social systems are frequently taken into account only as far as they have a (direct) impact on the resilience of the ecosystem.

Indeed, despite the label ‘social-ecological system’, resilience has not fully integrated social and ecological systems into a coherent whole, and has been criticised for its sometimes shallow treatment of the **social dimensions** of social-ecological systems. As Kinzig (2012: 323) notes, it is unclear whether it is possible to fully integrate the two domains: “social and ecological systems are not the same – the role of foresight and culture in human societies has no real compelling parallel in ecological systems, and while humans along with all other organisms are products of natural selection, their preferences and goals often run contrary to maximising the basic biological definition of fitness”. She thus points out that the principles governing the dynamics of ecological systems often do not translate seamlessly to social systems, not least because humans can and read (and misread) environmental signals, sometimes with unintended outcomes, or (un)willingly ignore the dependence on ecological processes.

Davidson (2010, 2013) highlights that especially **agency** is a concept not present in ecological systems, and consequently not reflected in the framework of social-ecological resilience. Indeed, since ecosystems or their components cannot act consciously, many causal mechanisms can reasonably be treated as deterministic, i.e. under the same set of conditions, an ecosystem can be expected to respond in a consistent manner. However people can and do act in a purposive, intentional way. Humans thus have a certain degree of autonomy within a structure, can be reflexive and learn. They may take conscious, transformative steps to change incentives to attenuate negative environmental effects once they recognize that adaptation is necessary. This enables them to postpone the effects of ecological disruption in space or in time, possibly leading to greater disruption being imposed on people elsewhere or *elsewhen* (Davidson 2010:143).

A key issue in social science is that agency is unequally distributed, i.e. privileged elites tend to exercise **power**, influencing decisions on e.g. the management of natural resources to fit their interests and ideology (Davidson 2010, 2013). The concentration of power and control may limit the ability of other societal groups to act. Also, hierarchical structures may stifle feedback mechanisms, e.g. constraining the autonomy of farmers and their ability to respond to ecological signals. This aspect thus links resilience to the ‘governance’ theme, and the potential effect of multi-layered governance and globalisation (i.e. the distance between decision makers and the ecosystem) on resilience of farms and rural areas.

Regarding resilience thinking, the overall the consensus seems to be that many concepts which originated in ecology can be used fruitfully applied in the social domain. So far

they have been used mostly as heuristic devices and as **metaphors** (e.g. the adaptive cycle as a metaphor for the dynamics of change which includes both continuous and abrupt change). In other words: while it is useful to discuss the resilience of social-ecological systems at general level, when it comes to the empirical and analytical level, there are distinct logics in the social sciences as compared to ecological sciences. The challenge within RETHINK is thus to identify ways operationalize resilience thinking in the context of farming. To achieve this, the social component of the integrated social-ecological systems needs to be rethought so as to reflect a much broader understanding of social sciences, which includes agency, social stratification, control of resources, and links to the wider world as important dynamic forces (Widgren 2012).

When applying resilience at the farm level (see Darnhofer 2014), it thus might be helpful to integrate some insights from e.g. **management sciences**, where the ability to cope with change has preoccupied many researchers. One of the concepts that could be useful to adapt to farm resilience is the concept of *dynamic capabilities* developed by Teece (2007). He posited three generic dynamic capabilities as the foundation of the evolutionary fitness of the enterprise: sensing (and shaping) opportunities and threats; seizing opportunities; and reconfiguring assets and structures to maintain competitiveness. Indeed, it is not just the resources a farm family may have that play a role, but what they make of them, how they combine them, how they develop them. In the choice of a new activity, it is thus not only important what *resources* are available, but of equal importance is the process of how they are *recombined and exploited*. As Grande (2011) points out, establishing a new activity often means looking at the farm's resources (e.g. personal skills and preferences, knowledge, physical assets such as land and building, rights such as quotas) in new manners such that new attributes and characteristics may be discovered and developed. These can be used to re-orient a farm, through e.g. deepening, broadening or regrounding (Knickel et al. 2004). In this reorientation process, the resources are combined in different ways, to develop new activities. Depending on which uses and for whom, a resource might have significantly different values for different people and businesses.

The 'dynamic capabilities' are thus related to a farm's ability to integrate, build, and reconfigure itself to address an environment that changes in unpredictable ways. This dynamic, **process-orientation** thus focuses not so much on what a farm 'is' but what it makes of its assets and how it purposely creates, extends and modifies these assets to address both internal changes (e.g. linked to the farm family life cycle) and external changes (e.g. linked to new customer demands or CAP reform). In this the ability to recognize and seize opportunities is key, as is the ability to reconfigure assets and competencies (Augier and Teece 2009). Building on these insights, the resilience of a farm or of a region is only partly due to the characteristics of the farm or region, and partly due to processes.

At the territorial level, resilience may be linked to the **concept of 'potential'** as discussed in Shucksmith and Rønningen (2011: 277). They point out that 'potential' is *pluralistic*, acknowledging multiple voices and visions, and *emergent* in that it encourages new ideas, opportunities and possibilities to emerge and to be woven into the trajectory of changing places. Place-shaping processes thus involve processes that permit flexibility and adaptation to challenges and opportunities as they arise, but which at the same time maintain or open up options and choices for future generations.

Overall, **farms and rural communities are facing a wide range of changes**, which challenge their resilience. The changes include those induced by shifts in climate, food markets, public policies and various forms of urbanisation. Indeed, climate change (including changes in temperature, precipitation, extreme events) may limit or expand

vulnerability. Expanding food markets combined with agricultural policy reforms may increase competition, and integration into globalized food chains may increase the dependence of farms on external factors. The de-coupling of agricultural support to some degree implies a re-coupling of dependence on bio-physical conditions, which in some regions leads to a marginalisation of agriculture. Important policy changes are to be expected: besides the de-coupling of agricultural support measures, also the expansion of the rural development measures, more environmental regulation (especially concerning water resources), as well as the impacts of energy and climate policies. Urbanisation may change the overall social conditions for agriculture and for rural services, whereas counter-urbanisation may create both more opportunities and more disturbance in terms of competition for land and social segregation. All of these are likely to challenge the resilience of farms and rural communities.

Case study questions:

- Which aspect of resilience seems most relevant to your case study?
- Will you focus on farm resilience or on regional resilience, or on both? How do farmers define 'resilience'? What do they think contributes to the resilience of their farms? How do regional stakeholders define a resilient region?
- How do you define the social-ecological system (SES) in your case study? How can the SES be described in terms of resources used; resource user groups; governance systems/regulations? Note that farms/regions may be seen as multi-scale systems that connect in manifold ways to regional, national, global systems.
- Which disturbances can be foreseen? What is the time scale, intensity, frequency of the expected changes?
- How does the de-coupling of the CAP affect resilience of agriculture or rural communities in your case study?
- To understand resilience a vulnerability analysis can be helpful: which are the vulnerable components of your system?
- Which farmers choose which adaptation strategies and what sorts of constraints limit their efforts? Do shocks reduce the capacity for reflexive agency or enhance it?

In WP 4, the **comparative analysis** for the 'resilience' theme across the national case studies will be led by: Gunilla Almered Olsson (SE) and Ika Darnhofer (AT).

4. Prosperity

4.1 Defining prosperity

A new understanding of prosperity was elaborated in the framework of the Sustainable Development Commission (see SDC 2003, Kasser 2007, Sardar 2007, Rapp 2008, Wall 2008, SDC 2009). This new understanding was popularized by Tim Jackson (2009: 35ff). It builds on a vision in which human beings flourish, achieve a greater social cohesion and find higher levels of **well-being** while reducing their material impact on the environment. This contrasts with the conventional understanding of prosperity as building on economic growth, driven by consumption. Conventionally, growth is measured in the Gross Domestic Product (GDP), i.e. based on increasing material throughput. Growth of output does not accurately represent the growth of human welfare. GDP counts only goods and services that are traded in the market or have prices attached (Baumol et al. 2007). As it fails to account for non-market services (like household and voluntary labour), for negative externalities (like environmental

degradation), and for changes in the asset base which affect our future consumption possibilities, the widespread use of GDP as a key indicator of prosperity has been widely criticized (e.g. Stiglitz et al. 2008). Indeed, prosperity for the few, founded on ecological destruction and persistent social injustice is no foundation for a civilized society (Jackson and Anderson 2009).

Jackson (2009:44) points out that in a **world of limits**, certain kinds of freedoms are either impossible or immoral, e.g. the freedom to endlessly accumulate material goods at the expense of child labour or the freedom to find meaningful work at the expense of a collapse in biodiversity. He thus proposes that we need to be aware that our freedom is *bounded*. These limits are established by two critical factors: the finite nature of ecological resources (e.g. fossil fuels, minerals, water, land); and the scale of the global population: those who share the planet with us are entitled to their fair share, which applies to future generations and other species. The point is thus to aim for *fair and lasting prosperity*. This vision of prosperity may serve us better than the narrow materialistic one that has ensnared us so far (Kasser 2007), and it might direct us away from aggregate quantitative growth, towards qualitative development (Herman 2008).

Jackson (2009) thus proposes to **redefine prosperity** along two main issues: ecological and social. In his vision he accepts that prosperity has material dimensions to ensure adequate supply of food, water, shelter, clothing, etc. But for human beings to flourish, prosperity needs to take into account psychological and social dimensions. Indeed, we need meaning and purpose in life, and the ability to participate freely in the life of society, e.g. by caring for our family, enjoying the respect of peers, contributing useful work, having a sense of belonging and trust in the community.

Jackson (2009:37ff) builds on the three understandings of prosperity elaborated by Amartya Sen (1984):

- a) *Prosperity as opulence*: this corresponds to the conventional understanding that prosperity is about material satisfaction, i.e. an increase in the volume flow of commodities represents an increase in prosperity.
- b) *Prosperity as utility*: recognizing that – given a diminishing marginal utility of goods – ‘more is not always better’. This second understanding of prosperity builds on the satisfaction which commodities provide. Recognizing that the use to which we put material commodities are social or psychological in nature (i.e. providing us with identity), rather than just material, and points out the challenge of measuring ‘utility’.
- c) *Prosperity as capabilities for flourishing*: i.e. the capability (or freedom to) function in a context and e.g. ensure nutritional health, take part in the life of the community, use their education, find worthwhile jobs, appear in public without shame, visit friends and relations.

Understanding prosperity as **capability for flourishing** implies the need to clarify what is meant by humans to ‘flourish’. Since it is a contested term, the understanding will need to be negotiated in open dialogue. But two central elements are a sense of community and meaningful work. Prosperity should thus be understood as a qualitative condition defined by inclusion, indeed by membership of the defining group, that part of society that sets the benchmark for opportunity, fulfilment of aspiration, ease and comfort – the good life (Sardar 2007, Baumol et al. 2007). The aim is thus to find farming models where humans can flourish, achieve greater social cohesion, find higher levels of well-being, while at the same time reducing their material impact on the environment through transparent, properly-regulated markets which promote both social equity and personal prosperity (SDC 2003).

And indeed, one of the prime features of *quality of life in rural areas* is linked to a social life characterized by networks, shared norms, rules and expectations which facilitate interactions and thus the ability to get things done collectively and a ‘sense of belonging’ (van der Ploeg et al. 2008). Similarly, *alternative agri-food movements* can be seen as initiatives where farmers and consumers innovate and seek alternative models, not just to eat differently, but to re-embed food in family, community, and local landscape. In this context, food self-provision is not a sign of poverty, but a meaningful, skilful task, which enables participants to live a simpler and more sustainable life. Such initiatives are thus laboratories for social change, for a redefinition of what quality of life implies.

This new understanding of prosperity thus implies a recognition that economic growth at the regional level and economic efficiency at **farm-level** are not suitable indicators for flourishing rural areas. While large, specialized farms may well have a role to play – and may have become the only type of farm in some regions – they should no longer be the unquestioned ideal. Specifically, this means rethinking the role of *small (family) farms* and their *contribution to prosperous rural areas*. Small farms, especially in ‘less favoured areas’ can often be linked with beautiful cultural landscapes, based on small-scale, low-intensity, environmentally-friendly farming. These farms can also be vital to maintaining public goods, including the natural and cultural heritage, landscape, and biodiversity. This managed countryside is not only important to maintain potentialities for future generations, it is also fundamental to tourism, which is often vital in more remote areas. Shucksmith and Rønningen (2011) point out that small farms might provide a base from which rural households are able to sustain their livelihoods through pluriactivity keeping ‘lights in the windows’ and retaining populations in areas from which they would surely have been lost if farm amalgamation had proceeded. While the role of pluriactive small farms has been pointed out (Bryden et al. 1993, 2011), especially their role in fostering vibrant rural communities, there is often little more than lip service to them in rural policy. Indeed, policy is often geared towards an ideal of full-time farms, treating small farms as obstacles to productivist agriculture. At the same time there are regions in which small (family) farms have almost disappeared, and where their contribution to rural prosperity might be defined differently. In other words: social capital is one of the most important determinants of prosperity. The term ‘social capital’ encompasses factors such as social cohesion and engagement, as well as community and family networks (Legatum Institute 2012).

4.2 The ‘Working With People’ framework

Working with People (WWP) is a conceptual framework which synthesizes the evolution of the ‘modern project’. It proposes a ‘new approach’ for prosperity in post-modernity in rural areas (Cazorla and De los Ríos 2013). Key to the WWP conceptual framework is ‘planning as social learning’ and a ‘new postmodern sensibility’ (Cazorla et al. 2005, De los Ríos et al. 2011, Cazorla et al. 2013). The name *Working With People* was chosen to convey the need to overcome the traditional technical-economic vision of prosperity, and the need to focus on individuals’ behaviour and the context in which they work.

Within the WWP model, prosperity results from the balance between three dimensions of competences: technical, behavioural and contextual. The aim of this approach is to achieve a balanced integration of various actors and an empowerment in the four areas of a social relationship system: political, public, private and social. In its application in the framework of rural development project, the WWP model builds on the following **principles and values**:

- *Respect for and primacy of the people*: they are the main elements to be considered in any development strategy and in the design of any technical

innovation. Everyone involved are thus committed to respect the fundamental rights of the people, their traditions and cultural identity. Respect and social sensitivity must extend to the people in charge of managing the rural development projects, which must be defined and negotiated through participative processes of social integration.

- *Guarantee social well-being and sustainable development:* WWP requires that the technical investment and efforts made must be directed to satisfy the needs of the rural population, focusing on social well-being and the sustainable development of rural communities. Technology, knowledge and their transformation into innovation constitute determining factors to guarantee social well-being and prosperity, not least through encouraging job creation and work satisfaction.
- *Bottom-up and multidisciplinary approach:* WWP builds on the subsidiary principle, in which rural development projects are the responsibility of rural community actors. The aim of the bottom-up approach is to reinforce people's ability, knowledge and practices, to ensure a sustainable development of their territory, and to allow a better efficiency of public investments. To achieve this, it is necessary to build a network which facilitates a thorough knowledge of the territory, as well as the action of multidisciplinary teams that offer different approaches and diverse perspectives.
- *Endogenous and integrated approach:* The WWP project requires a global approach, which will take into account all aspects, and therefore allow the creation of new combinations and synergies generating new projects and new activities, with the intervention of socio-economic agents and managers through pluri-sectorial interventions.

Building on these principles, the WWP model proposes to redefine rural prosperity along three main components: **ethical-social, technical-entrepreneurial and political-contextual**. These three components interact through social-learning processes (Fig. 2). These three components include the four fields of a social-relationship system as defined by Friedmann (1992): the political field, the public administration field, the private and entrepreneurial field, and finally the civil society field. The apparent simplicity of WWP involves a large social complexity (De los Ríos et al. 2013) given the richness of the relationships and lessons that occur between the three components of the model.

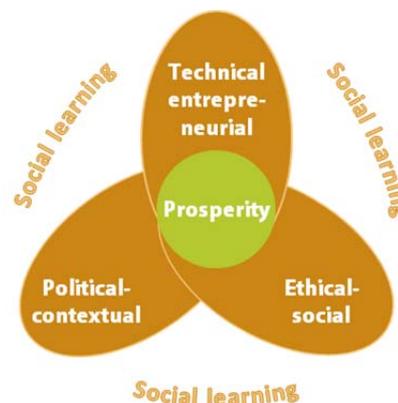


Figure 2: In the WWP framework, prosperity builds on three main components: ethical-social, technical-entrepreneurial and political-contextual, which interact through social learning processes (Source: Cazorla et al. 2013)

4.3 Rethinking prosperity

According to the principles set up within the WWP framework, the following aspects need to be considered when rethinking prosperity:

Firstly, prosperity is connected with the **contextual and political dimension**. While the WWP has four principles and values (see previous section), the best approach for any particular circumstance is dependent on the objectives of the intervention and the specific context. The contextual competence elements are critical to enable an appropriate integration of the project team within the context of the project and within the permanent organization. Unfortunately, most national and international development agencies assume that there is one approach (their existing policy) which is the best and they miss the essential first stage of the project cycle, by not asking the question: what type of intervention approach is best suited to this type of issue in this context? The conceptual framework outlined in this WWP model provides a means to address this question, and contribute to 'new ways' and 'experience lessons'. This approach will contribute to the strengthening of the conceptual framework that underpins rural development action.

Secondly, prosperity is related to the **technical-entrepreneurial dimension** of the rural development project. Indeed, such a project is an innovation unit and 'technical' tool capable of generating a flow of goods and services and to meet some targets, according to requirements and quality standards. The technological innovation – from the fundamental technical competence – has dominated debates concerning prosperity and development. WWP conceives prosperity as a process of social learning that includes new human relations, new management, administration and negotiation systems, new forms of learning, new ways of structuring and sharing information and knowledge among all social agents that bring innovation. Of relevance in this context is the technological innovation process occurring within economic districts characterized by a territorial network of relationship between economic actors. The persistence of the small farm lies in the presence of economies external to the farms that are generated within the district. The external economies of technological innovation will only be internalized when the relationship between the farms are based on reciprocal cooperation and trust (Dei Ottati 1987). Innovation as a process of social learning might be therefore understood, as an open and interactive process with an important social dimension, which means a constant adaptation of the forms of knowledge and learning to the market and the technological conditions that are constantly changing (Cazorla et al. 2013).

Finally, the **ethical-social** dimension comes into play in RETHINK's prosperity. This component covers the context of behaviour, attitudes and values of people who interact to promote, manage or direct a project. This component is identified with the social subsystem, consisting of all the interpersonal relationships that are taking place within society. The ground of the social system that surrounds a project is to cover the conduct and moral behaviour of people and it sets out the 'foundations' to make people, both from the private and public fields, to come to work together, with commitment, confidence and personal freedom. The incorporation of ethics, means considering the project as not 'neutral', but based on an ideal of service and guided by values. This component integrates behavioural competences with ethics and values as appropriate elements to overcome potential moral conflicts related to the parties involved in the project (IPMA 2010). Facing the technocratic view of the modern project, which tended to exclude moral considerations the project seen from this dimension tries to achieve the best for a greater number of people. Yet, the participation of the beneficiaries is essential for the effective development of an intervention, but it is only one element of a systematic approach. Social learning processes require a collective dimension,

integrating different knowledge in decision making. The new tendencies point towards an acceleration and important changes in the ways of learning, towards processes based on action – learning by doing– as well as competence-based learning (De los Ríos et al. 2010) in the training of values and abilities.

This approach to rural development research enables us to consider questions of how knowledge can be better connected to action. In WWP – in the same way as the European rural development LEADER initiative – the innovation is essentially defined as a process (Cazorla et al. 2005), and is mainly obtained from the local knowledge, which is as appropriate for the action as the knowledge obtained from the professionals and the external input (Uphoff 1990). In the same way, by accepting and encouraging ‘intangible’ investments, this approach helps to reinforce the social, cultural and environmental sectors, and to promote a new understanding of prosperity, which has as main aim to know and observe the realities. This is done based on a respect towards the others (Cazorla et al. 2001), on the appreciation of their values, on the ability to understand their point of view. These aspects are also a path for a new understanding of prosperity. Understanding prosperity from this approach requires the professionals of development to give up their own ideas and to create a new social sensibility, as well as covering the ability to communicate with them and to be receptive to their opinions, value judgments, and **ethical standards**. From the understanding of these questions it will be possible to move forward to enhance prosperity, making the rural development project and the interventions more effective and human.

Case study questions:

- How does each of the three WWP components (ethical-social, technical-entrepreneurial, and political-contextual) contribute to rural prosperity in your case study?
- What is the role of social learning?
- How do you define ‘prosperity’ and a ‘flourishing’ farm and/or rural area in your case study? Can this be linked to a shift from a focus on costs of production and cost-efficiency (i.e. input/output relations) to effectiveness (i.e. adequacy to accomplish a purpose such as quality of life)?
- How do the stakeholders in your case study define ‘prosperity’ and a ‘flourishing farm’? How does their understanding relate to the three WWP components?
- How do large, specialised farms contribute to rural prosperity and what might be their limitations?

In WP 4, the **comparative analysis** for the ‘prosperity’ theme across the national case studies will be led by: Kees de Roest (IT) and Ignacio de los Ríos (ES).

5. Governance

Within RETHINK the aim is to reflect on the dynamics that can be observed within the case studies and **determine characteristics, constrains and possibilities** for the development of governance mechanisms that enhance sustainable development and thereby foster the resilience and prosperity of rural areas and its agricultural communities at the regional level.

We first describe how the role of the state in agriculture and rural areas has changed over the last decades and the shift from government to governance. Next, we define governance as concept, describe its principles that enhance sustainable development but also indicate the weaknesses. To conclude, we elaborate on four characteristics that form the basis of a structural analysis of governance mechanisms in the case studies.

5.1 The changing role of the state

After the Second World War there was a tendency of **top-down centralized planning** (Rogge et al. 2013). The states in Western Europe developed large policy programs to bring their nations back to prosperity. To ensure food security the governments took many measures to encourage better productivity, market stabilization and ensure a fair standard of living to the agricultural community⁷. Within this top-down planning, the state used centralized planning to install various measures and was thus deeply involved in the modernization of agriculture⁸ (Grin 2012). Among other, the state structured the agricultural knowledge system, installed extension services and took policy measures that fostered the mechanization of agriculture. Through industrialization and investments in infrastructure, the main intention was to exploit and control nature, resulting in standardized production processes, convergence between rural areas and a disconnection of producers and consumers (Ward and Brown 2009, Wiskerke 2009).

This development was thus driven by the **productivist paradigm**, which was also tightly linked to the capitalist logic⁹. However the productivist paradigm follows narrow definitions of agricultural functions, product quality and causes selectivity in research. Furthermore, the role of small-scale farming in the social fabric of rural areas, its landscape and rural economy is undervalued (Bryden et al. 1993, Shucksmith and Rønningen 2011). During the past decades, a wide range of citizens (e.g., farmers, consumers, entrepreneurs) questions this imperative and search for alternative practices where agriculture has a more multifunctional role in the rural areas.

Indeed, new technologies and societal demands offer new possibilities for value creation in agriculture. This resulted in a shift from a specialized, intensified and concentrated agricultural sector to a **more diversified multifunctional sector** with the production of energy and fibres and attention for the provision of public services such as recreation, amenity care and ecosystem services (Rogge et al. 2013). Next to these changes within the agricultural sector, different social, economic and political change processes have transformed rural areas throughout Europe (Shucksmith et al. 2011).

Alternative modes of farming (e.g. those linked to short food chains) create linkages between farming and rural nature, cultural landscapes and local resources and therefore re-socialize and re-spatialise food production (Renting et al. 2003, Kirwan 2004: 395). Furthermore, there is a need for social innovation, as this new rural reality requires the mobilization of **multiple stakeholders** around a common project (e.g. nature management). Indeed, farmers are no longer the predominant actors in the countryside and agricultural development is intersecting with other processes affecting rural development, first of all urbanization (Primdahl et al. 2014). Rural development has become a multi-actor, multi-level and multi-sector process (van der Ploeg and Marsden 2008) and combinations of conflict management and place making in rural landscapes through new ways of policy making and spatial planning must be developed (Primdahl, forthcoming)

These changes have **challenged policy making**, because the traditional steering mechanism of the central state can no longer deal with this complex situation (Böcher 2008). Rethinking agriculture therefore means to look for new governance mechanisms

⁷ http://ec.europa.eu/agriculture/cap-history/index_en.htm

⁸ See the Conceptual Framework for a description of the modernization of agriculture

⁹ The capitalist logic is closely linked to a generalization of market dependence: workers are hired, inputs are purchased on the market, and output sold on the market. This logic is opposed to the peasant mode of production, which seeks autonomy, i.e. the ownership of the means of production (land, labour) and self-sufficiency in seed, feed, fertilizer, etc., with only the surplus being sold on markets.

that can orchestrate the multi-actor, multi-level and multi-sector rural development trajectories.

Two different policy processes affecting rural areas can already be observed: a vertical and a horizontal rescaling of statehood (Messely et al. 2014, Ward and Brown 2009). Firstly, there has been a *vertical rescaling* of statehood. Power is shifted from nation-state to supra-national bodies such as the European Union (Adshead 2005). For example the Common Agricultural Policy influences decision-making processes at farm level. At the same time we can observe a process of regionalization, where the authority is shifted to the local scale (e.g. in land use planning). Secondly, there is a *horizontal rescaling* of statehood that resulted in the shift from government to governance (Stoker 1998). Governments have the power to legally enforce their activities, rules and policies. Yet single policies from the government imposed on territorially heterogeneous populations do not efficiently address the heterogeneity at regional level (Hooghe and Marks 2003, van der Meer et al. 2005). Instead, we see new governance mechanisms in the development of new alternative modes of farming. Such new mechanisms are carried by pro-active networks involving a variety of public and private of actors and institutions. Furthermore, such new governance mechanisms are often more spatially embedded and context dependent (Marsden 2013).

5.2 Defining governance

In RETHINK **governance** focuses on the dynamic and complex mechanisms that structure the design and implementation of policy (Dwyer 2011). The concept has been defined as “the development of governing styles in which boundaries between and within public and private sectors have become blurred” (Stoker 1998: 17). It denotes “non-hierarchical elements and the participation of private interests and actors in the formulation and implementation of public policies and the provision of collective public goods” (Héritier 2002: 351, in van der Meer et al. 2005). In other words policy making is exercised on multiple levels and involves multiple actors and multiple sectors (Rogge et al. 2013: 330). This means that while the government sets incentives to activate self-governing responsibilities of regions (Böcher 2008), stakeholder partnerships play an important role in the design and implementations of policy (Dwyer 2011).

In the literature five **principles of governance** have been described to enhance sustainable development and thereby foster the resilience and prosperity of rural areas and its agriculture communities at the regional level. Firstly, multi-stakeholder partnerships allow new governance mechanisms to *deal with the increasing uncertainty and complexity* in a multi-level world (Berkes 2007). Secondly it is argued that the involvement of a diversity of participants including social movements and civil actors in policy making processes could provide a counterbalance to the current dominant agenda of economic development in rural areas. New governance regimes thereby could exceed the economic imperative and include *social and environmental criteria* (Davidson and Lockwood 2008, Heley 2013). Thirdly, multi-stakeholder governance creates institutional capital in the form of rich *social networks* that allow the development of new initiatives to be taken rapidly (Healey 1998 in Heley 2013). Furthermore, these social networks could enable room for experimentation and social innovation, encouraging cooperation and solidarity rather than one-sided economic competition. Fourthly, the participation of a great variety of stakeholders in governance processes gives access to *different kind of knowledge*, which could be vital for finding innovative solutions to overcome institutional barriers (Berkes and Folke 2002). Fifthly, multi actor involvement makes it more likely that *preferences of people affected* by the policies are taken into account, which could lead to collective efforts to re-imagine a region and more effective socially accepted solutions (Shucksmith 2010).

Nonetheless, the participation and cooperation of different actors proves **not to be an easy exercise**. As Rogge (2013: 330) argued “there is often considerable tension between different policy domains, sectors and stakeholders”. Actors’ positions within such networks are socially produced, as is the justification for their interventions. In a continuously changing environment *stakeholders have changing and different priorities*, and actors in multi-stakeholder partnerships will have to modify and renegotiate their goals in an ongoing fashion (Davidson and Lockwood 2008). As a result one needs to manage tensions between individual interests and the collective good. In this context it can be expected that not all governments are willing to give up their steering role, and if they would like to do so they might not always have the knowledge *and skills to allow for more participation of local stakeholders*. Finally also the local actors might lack skills to organize themselves and face difficulties to develop resilient strategies.

Moreover, as Swyngedouw (2005) argues, the shift from government to governance does not necessarily mean a shift towards more citizen empowerment and socio-economic decision-making. It could also strengthen the **power of economic elites** and disempower groups promoting non-economic societal objectives. As Swyngedouw (2005: 2003) notes: “these modes may prove to be a Trojan horse that reinforces the ‘market’ as the principal institutional form”.

5.3 Capturing the dynamics of governance mechanisms

In relation to rural development, Shucksmith and Rønningen (2011) argue that sustainability necessitates keeping open the potential of rural areas to become different things in the future, according to changing circumstances and values which were not well recognized by neoliberalism. ‘Potentiality’ means **keeping options open**, social and economic as much as environmental, allowing differences and variety so that future generations have possibilities of reaching their sustainability aims. In terms of governance, stakeholders have changing and different priorities, and actors in multi-stakeholder partnerships will have to modify and renegotiate their goals in an ongoing fashion (Davidson and Lockwood 2008). This creates a very dynamic context, in which it is important for researchers and policy-makers to avoid the trap to develop new blue print approaches (Ostrom 2007).

In RETHINK, gathering data on a wide variety of European cases should allow us to go beyond the development of blueprint approaches and should enable us to get a more profound insight into governance mechanisms that are able to respond to a dynamic environment. To structure the analysis and still capture the full complexity of governance processes we will use the four dimensions of governance that were described by Pahl-Wostl (2009). She developed a systematic approach to analyse characteristics of governance regimes and their adaptive capacity. In the next section the key attributes identified by Pahl-Wostl are shortly explained and operationalized in the context of rethinking farming and rural development.

(1) Institutions: formal and informal. Studies have underlined the role of external factors that influence policy outcomes (Andersson and Ostrom 2008). These ‘external’ factors relate to the institutional environment in which new forms of governance are developed. Institutions, defined as ‘rules governing the behaviour of actors’ (North 1990) can be formal and informal. *Formal institutions* refer to rules that are defined in regulatory frameworks and can be enforced by legal procedures. On the other hand *informal institutions* refer to socially shared rules such as cultural norms, values and belief systems. Informal rules are often not written down and are enforced ‘outside of legally sanctioned channels’ (Pahl-Wostl 2009: 356). The characterization of existing formal and informal institutions is important when we want to understand drivers and

barriers for change. For example, formal rules about nature management could potentially conflict with informal norms and values of farmers. Such contradictions could be a driver or a barrier for change. Furthermore the relative strength of either formal or informal rules will also influence *the power relations* among actors involved. As Davidson and Lockwood (2008: 647) argued: “The absence of formal rules may obscure inequalities of power and mask the agendas of dominant interests, while the assumption of ‘benignness’ means that they usually embody few means of resolving conflicts.”

(2) Actor networks, emphasizing the role and interactions of state and non-state actors. The role of actors becomes blurred as: “actors are involved in designing the institutions that (are supposed to) govern their behaviour” (Pahl-Wostl 2009: 357). Yet as was argued earlier the involvement of multiple non-state actors in the design of formal institutions increases the complexity of policy development. It could increase compliance and effectiveness but participatory processes are also resource consuming and sometimes less efficient. It is therefore important to question what actors are involved, on what terms they are involved, and who does not take part in the governance process (Heley 2013). Also interdependence among participants is an important factor for successful processes and outcomes and should be included in network analysis (Innes and Booher 2010). Furthermore, attention should be given to ways used to mobilize actors so that they are in a position to develop strategic agendas collaboratively. The concept of ‘spatial strategy making’ (Healy 2009) has proven to be highly relevant for rural landscapes as well (Primdahl et al. 2013).

(3) Multi-level interactions across administrative boundaries and vertical integration. Polycentric systems, involving many centres of decision-making at different levels are argued to have “a higher adaptive capacity and to be less vulnerable to disturbance” (Pahl-Wostl 2009:357). Nonetheless, Borowski et al. (2008) found that problems with the multiple dimensions of newly established partnerships between multiple-stakeholders and the partners of more traditional governments at multiple levels, proves to be a barrier for the implementation of new developed strategies. Also Mosterd et al. (2007) found in their case study that integration across scales and policy domains was one of the major challenges to participatory processes that come in hand with multi-stakeholder partnerships. Therefore in our analysis we will focus on how stakeholders look for solutions to overcome barriers for vertical coordination (Pahl-Wostl 2009).

(4) Governance modes: bureaucratic hierarchies, markets, networks. Pahl-Wostl (2009) argues that governance regimes vary along two dimensions: in the degree of formality of institutions, and in the role of state versus non-state actors. She argues that governance regimes based on mainly informal institutions where both state and non-state actors participate, have great advantages in terms of their adaptability in processes of change due to their power distribution over multiple actors, their connections and flexible membership. However due to their informality they tend to lack permanence and predictability (Pahl-Wostl 2009). In agricultural and rural development actors need a certain level of permanence and predictability to be able to develop sustainable solutions and gain their own experiences. In our analysis we are therefore interested in the balance between formal and informal relations between actors, and the level of formality of institutions that can be observed in the governance regimes of case study regions.

Case study questions:

- What type of governance mechanisms do you observe and how do they deal with change?

- To what degree and in what ways are different policy domains integrated within the case study area (esp. agricultural policy, environmental policy and spatial planning??)
- What type of actors are involved in the stakeholder partnerships you observe in your case study region and how do they interact?
- How is the collaboration between public authorities and the local community? (e.g.: who takes initiatives, who has the responsibility/ownership of policies and plans produced?)
- How is authority (to make decisions) divided within the governance regime (e.g. bottom up/top down)?
- How do actors deal with individual interests and the collective good? Are there signs of reciprocity?
- What important formal and informal rules influence(d) the governance regime in your case study region?

In WP 4, the **comparative analysis** for the 'governance' theme across the national case studies will be led by: Guido van Huylenbroeck (BE) and Marguerite Paus (CH).

6. Knowledge and learning

Under this analytical theme we are aiming to explore how learning and knowledge are mobilised to rethink modernisation and improve agricultural resilience and rural prosperity.

6.1 Definitions

Knowledge is generally understood as an awareness or familiarity gained by experience or education. It involves meaningful information, facts and skills an individual or a collective possess (so knowledge can be both individual and collective property). There is broadly acknowledged distinction made between explicit (also referred to as codified, standardised, formal) knowledge and tacit (or implicit, context-dependent) knowledge. *Explicit knowledge* is knowledge that can be easily articulated, codified, stored and transmitted to others. Regarding agriculture and farming, explicit knowledge is often associated with standardised solutions proposed by formal knowledge institutions or global market actors. *Tacit knowledge* is difficult to adequately verbalise and it is transferred and exchanged by common experience with trust as a crucial precondition. In the context of agriculture, tacit knowledge refers to specific local knowledge embedded in local contexts. Although tacit knowledge is often not well aware even by its possessors and it is also more difficult to capture for researchers. In RETHINK we aim at considering both these types of knowledge. In addition, also other knowledge forms can be identified: practical, experiential, traditional, popular etc. Their relevance in each case study may differ and their authors may consider which are applicable for them.

We want to draw attention to existing hierarchy or differing acknowledgement of various knowledges. There are knowledges that are recognised and valued and other that are found as less relevant or even ignored. Such attitude has implications also to farming practices and their outcomes and therefore we invite to pay attention also to discarded knowledge. Finally, such concepts as ignorance and non-knowledge, which denote correspondingly unrealized and realized limits of knowing (Gross 2007), can be useful to understand farming in uncertainty conditions and how agricultural resilience is strengthened.

Learning is the experience of gaining new knowledge and skill. Learning entails accessing or sharing knowledge already existing within the wider community and it might be also exploring the unknown and new knowledge horizons. In RETHINK we

wish to take into account all relevant learning forms, whether it is formal (organized and controlled by formal curriculum), non-formal (organized learning outside the formal curriculum) or informal (based on experience) learning. Learning can happen at individual or collective level. *Collective* (collaborative) *learning* occurs in interactions and when beneficiaries of learning is the whole group, organisation or network; for instance, it is learning within peer-to-peer groups during joint action, discussions and reflection. However, as it will be outlined below, we propose to regard several learning forms in the framework of *social learning*, which considers learning as social, i.e. interactive collective process embedded in the particular social relations. It illuminates and helps to understand how the diversity of knowledge is actually used, exchanged, created and put in practice through social, organisational and institutional interactions.

Three general questions form the guidelines to analyse knowledge and learning processes in agriculture:

- How knowledge and learning contribute to renewed modernisation, resilience and prosperity?
- What is relation between knowledge, resilience, prosperity and governance?
- How to activate learning and creation and application of knowledge for resilience?

Knowledge occupies a central place in rethinking and reorienting modernization. Only by learning and generating knowledge about modernization, its intended and unintended consequences in agriculture and beyond it (as they are outlined in the Conceptual Framework), one can act upon them and possibly change the modernisation's path and so do contribute to agricultural resilience and rural prosperity in more appropriate ways.

6.2 Linear knowledge transfer vs. joint knowledge production

But also the very understanding of knowledge and learning as well as knowledge practices employed to advance modern agriculture may need revision and re-orientation. Modernisation project in agriculture has led to continuous disembeddedness of agricultural production practices from diverse local contexts and knowledges, and instead they have become increasingly dependent on rather uniform (paid) external experts' knowledge. Despite that, farming has become knowledge intensive and demands from farmers a broad range of knowledge (not only production-related, but also about regulation, book-keeping, marketing, finances etc.). Winter (1997) argues that modern agriculture is under-knowledged and farmers might need not only learn but also unlearn to adopt more sustainable practices. This results from the fact that modernisation has rested primarily on scientific and technical knowledge, and the '**linear model**' of knowledge transfer with the major narrow goal to increase agricultural productivity. In this model, researchers develop new technologies, products or production methods, which are then transferred to farmers through extension services. The 'knowledge transfer' model is a top-down, state-driven process, based on the principle that the 'right knowledge' is produced by official research centres (Brunori et al. 2013). It thus favours laboratory-based techno-scientific innovation, and is intimately linked to capital-intensive innovation for economic competitiveness, and the development of inputs subject to protection of intellectual property.

While the knowledge transfer model is still the dominant in many extension services and agricultural and education policies in general, it has been criticized, not least for devaluing implicit and practical knowledge, for favouring the technical over the social dimensions of innovation, and for its one-sided focus on agricultural production rather than addressing the diversity in farming (esp. in its combination with tourism, on-farm processing, direct marketing or energy production) (Knickel et al. 2009).

As a result, the simplistic view of ‘knowledge transfer’ is currently being replaced by the model of ‘**joint knowledge production**’ or **network learning**. This model builds on (often informal) networks, within which expertise is recognised through reputation and trust, not as an attribute of belonging to a specialised research body (Brunori et al. 2013). Network approach allows acknowledgement and integration of various knowledge sources, types and processes and learning modes. It shifts from monoculture of scientific knowledge towards ecology of knowledge which assumes the diversity of knowledge and their composite character (Santos et al. 2007). Therefore it crumbles the hegemony of scientific knowledge and makes present other alternative knowledges, which have often been marginalised, ignored, discredited and devaluated. Especially local, tacit and farmer knowledge have been subjugated to ignorance. Network model acknowledges that farmers have important knowledge, esp. regarding natural resources and the local agro-ecological system. It aims at developing low-external input farming systems and agro-ecological methods. It can lead to the enhancement of local capabilities, while accommodating diversity and complexity (Padel et al. 2010).

Next to farmers, the network model also allows introducing consumers, rural residents, market enterprises, NGOs, policy makers and other actors into agricultural knowledge system. As Oreszczyn et al. (2010) show, farmers’ learning happens in complex social systems, which involve many people and organisations also outside farming, and agricultural community who have impact on actual farming practices. All together they represent a great diversity of available knowledge resources which are used in agricultural and rural development practices: technical and economic, production and marketing oriented, codified and tacit, local and distant, farmers and expert created, issue specific and more generic, necessary for the solution of specific problems and systemic transformation, etc. They show the complexity of agricultural knowledge system and indicate that there are also other knowledge systems available that might be used in modernising the farming practices, like sustainable food systems, social services, public health, energy etc.

By that the network model also involves a different approach to knowledge, especially regarding what is seen as valuable knowledge: it is not only scientifically tested and approved knowledge, but also experiential, practical, tacit, traditional or indigenous, popular knowledge.

The need to combine various knowledge sources draws attention to incompleteness of knowledge. No individual actors or even their collectives can possess all stocks of knowledge. Actually absolute knowledge is barely possible; especially if the uncertainty of conditions is considered and even if those uncertainties are ‘manufactured’ by human decisions (Beck 1999). The unintended consequences of modern agriculture in terms of environmental, social and also economic damages are striking examples of the limits of knowledge. In addition, together with scientific, professional and societal dynamics the knowledge pool is constantly changing and enlarging, as new kinds of knowledge come into operation and old knowledge fades out. Every new knowledge adds to our understanding, but it also increases proportionally the perceived amount of non-knowledge (i.e. of what is considered as not known yet) (Gross 2007). Operation under dynamic uncertainty conditions demands adaptability, which is based on actors’ active learning capacity.

Network model revises also the learning process, what is learning and how new knowledge is gained. Instead of the linear knowledge transfer model which considers individual farmers as learners who are presented as passive absorbers of the purposefully disseminated knowledge, network model rather advocates active social learning (Wenger 2000). Social learning reveals learning as happening in interactions of various actors who share some interest (and by that forming so called communities of practices

(Lave and Wenger 1991) and who bring together and exchange their different life-worlds. During those learning interactions they co-create new meanings and rebuild their identities. As such, learning finds expression as social participation and it is situated or embedded in particular social contexts in which it takes place (Wenger 2009). Actually learning is a permanent life experience as it is accompanying whatever experiences, but it can take also a more formal form and be the very explicit aim of interactions.

Social learning approach reveals better the human base of knowledge – knowledge is appropriated by people who attach meaning to it and make use. Therefore knowledge is not only instrumental, but it is also infused by values, cultural and social factors (embeddedness) and everyday realities of farming life.

Network and social learning models stresses the collective nature of learning: learning happens not only at individual level but also at collective one when the beneficiaries of learning are all the involved. But both learning modes are complementary and interact.

Learning requires specific socio-technical structures and mechanisms of communication. Depending on the level of interconnectedness among actors, the structure and strength of their ties, social learning takes form of communities of practice (Lave and Wenger 1991) or networks of practice (Brown and Duguid 2001) or web of influencers (Oreszczyn et al. 2010). There is a great variety of social mechanisms employed to encourage learning. Just to mention some of them: meetings, conversations, projects, experiments, study programmes and visits, seminars, exhibitions, working groups etc.

Solinsa¹⁰ research shows that there is a link between learning structures and modes and types of learning employed: learning process follows various stages of network development and responds to emerging needs and learning opportunities. Learning is less formalised when networks are fragmented or it happens in smaller groups of farmers, and there are few links with agricultural knowledge systems (AKS) and learning is not defined as a priority. High level of coordinated and formalised learning are associated with more structured networks with strong links to the formal AKS and when there is the need to achieve formal accreditation or certification and uniform knowledge (for instance, when large scale agricultural network is being transformed into an association or partnership).

In addition to social mechanisms, technical infrastructure is crucial to ensure learning. Together with increasing accessibility of the internet, various online tools are applied to facilitate knowledge dissemination and exchange and learning. Many agricultural organisations and networks use internet-based communication, operate websites, mailing lists, emails etc.

Network approach invites to take into account the hybridity of learning networks, its social and technical elements, multiplicity of knowledge and learning forms and multi-directionality of knowledge flows. The diversity of actors and processes involved may be not only enriching but also bring about different, even contradictory interests, motivations, views, or values, which can make learning processes conflictual and turn them into demonstrations of power (Eshuis and Stuiver 2005). This is the case also regarding sustainable agriculture and rural development that are complex and much contested concepts with many meanings attributed which then are transferred into a wide range of practices (Pannell and Schilizzi 1999, Bruckmeier and Tovey 2008).

¹⁰ SOLINSA is an FP7-funded research project: 'Support of Learning and Innovation Networks for Sustainable Agriculture', see: www.solinsa.net

Diversity and conflicts can be enriching and facilitate creativity and innovation at the end, but they can also block up new ideas and initiatives if common interest and language among actors cannot be established. Therefore this claims for the need of management or enabling knowledge processes. In order to improve connections of different life worlds and facilitate transgressive learning and innovation, boundary work, knowledge brokers and boundary objects come forefront (Klerkx et al. 2012, Klerkx and Leeuwis 2009).

This joint knowledge production model is also linked to a broader view of agricultural innovation, which is seen as a co-evolutionary process, i.e. combined technological, social, economic and institutional change (Knickel et al. 2009, Klerkx et al. 2012).

It is increasingly accepted that production and exchange of (technical) knowledge is not the only prerequisite for **innovation**, it also needs to integrate alternative ways of organising, i.e. social innovation. This interactive view is reflected in the concept of 'agricultural knowledge and innovation system' (AKIS)¹¹, which is understood as including four sets of actor: research, extension, support system and extension (EU SCAR 2012: 26). (More recently this foursome has been complemented also by industry, financial institutions and informal learning and innovation networks for sustainable agriculture called LINSAs (Brunori et al. 2013)) As each of these sets of actors is guided by specific paradigms, conflicts and tensions arise as to priorities in research and preferred processes. Thus while the demand for an interactive, joint knowledge production model is increasing, implementation remains a challenge, not least because the established education and training institutions tend to neglect skills in communication, cooperation and facilitation. As a result many extension agents still see their role as advising farmers in technical or economic matters, rather than as knowledge brokers who facilitate links among actors and set up frames to evaluate and select relevant information; or as facilitators for local innovation, through building informal networks.

The shift from knowledge transfer to joint knowledge production has also proven difficult because they build on different visions, different innovation trajectories and even different visions of farming. They also build on different power relations between farmers, the agro-input supply industry and research institutions (Levidow 2012).

Still, it is increasingly recognized, that while science-driven research and scientific knowledge has an important role to play, so does practical and place-based **knowledge**. To achieve resilient farms and prosperous rural areas we need a wider understanding of the knowledge base, and need to span the boundary between knowledge generators and users (EU SCAR 2012: 32, 42). This implies that expertise is sought in multiple forms from academics, practitioners, businesses, land managers and the public, all of whom can make valuable contributions.

In RETHINK we will explore the role of human resources, social learning and of different knowledge bases in the case studies. We will examine how knowledge is accessed and generated to advance agriculture and its positive linkages with rural development. Particular attention will be paid to the role of learning and innovation networks, social capital and the question of an efficient collaboration between regional authorities, farmers, research and extension (Knickel et al. 2009, von Münchhausen et al. 2010, Compton and Beeton 2012). This particular research component will in many

¹¹ The concept of AKIS has been developed in the early 1990s and is being used in policy discourses at OECD and FAO. At EU-level, there is a working group on AKIS within the framework of the Standing Committee of Agricultural Research (SCAR), see Dockès et al. (2012).

ways contribute to the operationalization of the new European Innovation Partnerships (EIP) policy at European and at national and regional level.

Indeed, the EIP ‘**Agricultural productivity and sustainability**’ (EIP 2013: 8) clearly recognizes the central role of knowledge systems, which are understood as evolving towards innovation networks. Collective and creative learning processes are understood as key, not least for social innovation, in which rural and urban actors develop new skills, products and/or practices, as well as new attitudes and values which allow them to address the sustainability challenge in rural societies. It recognizes that “trust building and knowledge exchange involving processes for capturing, collecting and sharing explicit and tacit knowledge and the advancement of skills and competences are of utmost importance (EIP 2013: 16).

To capture and analyse knowledge and learning in RETHINK case studies and their contribution to resilient modern agriculture, we propose to look at knowledge and learning as happening in iterative cycles (see Figure 3).

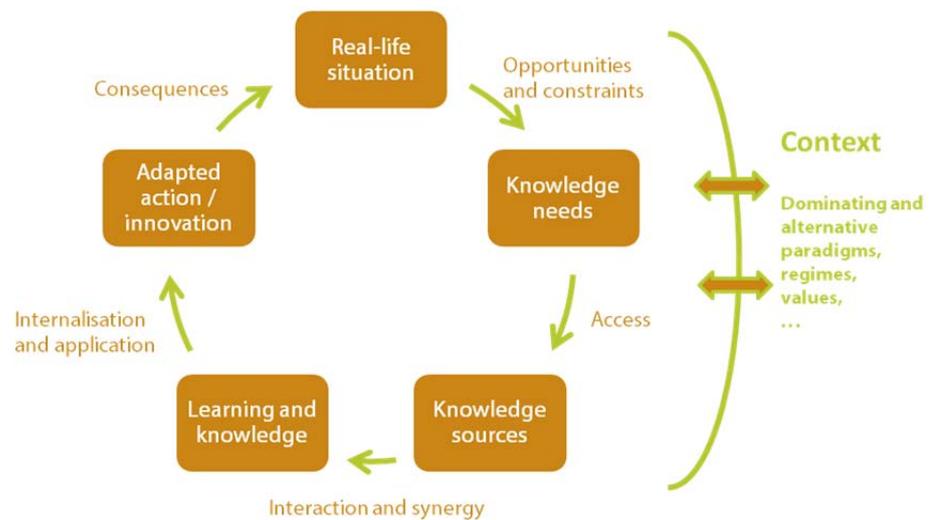


Figure 3: Learning cycles

Learning is embedded into real-life situations where some constraints or opportunities urge actors to obtain new knowledge. The possibility to satisfy those knowledge needs depends on actors’ access to various knowledge sources and networks. Actual learning and knowledge creation happens in ongoing interactions during which various knowledge sources are accessed, mixed and new knowledge synergies obtained. In order to call learning successful, the newly gained knowledge should be applied into practice. It can take the form of an adapted behaviour or, in more radical cases, it can lead to innovation. This new behaviour then has consequences, intended or not, on real-life situations which are transformed accordingly and may provoke further new knowledge needs. In addition, it has to be taken into account that these learning processes are happening into, and therefore are influenced by, broader contexts of various paradigms, regimes, values etc.

Case study questions:

- What are actors’ knowledge needs (technical, economic, organisational, etc.) in the particular case? How, from what situations have those needs emerged? What are actors’ motivations to acquire that particular knowledge?
- How are these knowledge needs met? What knowledge sources and networks are mobilised and used to meet those needs?

- What kind of knowledge (explicit, tacit; universal, local; scientific, farmer...) is used in your case study? Is some important knowledge ignored, not available or otherwise absent?
- What learning modes are used (individual/collective; formal/non-formal/informal...)?
- What is the role of AKS (i.e., research, education, extension and support organisations) in providing knowledge and stimulating farmers learning?
- What role does local government play in social learning associated with rural development?
- Is there a collaboration and collaborative learning happening between regional authorities, farmers, civil society organisations, research and extension, market and other actors? How is this collaboration enabled? Does it lead to social learning? How does it happen?
- What do those learning and knowledge modes practised tell about the accessibility and legitimacy of various knowledges?
- How are diverse sources of knowledge integrated?
- Is learning and knowledge converted into innovations? If yes: how? What innovations are they (technical, social; product, process; radical, incremental...)?
- What relations are there between learning and other key themes:
 - In what ways does learning increase resilience?
 - How are new modes of governance learned? What is the role of learning in implementing new (i.e. multi-level and multi-stakeholder) governance regimes? How do existing governance regimes enhance or hamper learning?
 - How does knowledge and social learning redefine prosperity? How does it contribute to it?
 - How does learning redefine itself? How are 'legitimate' and 'non-legitimate' knowledges reconsidered?
- In your case study, how does learning and innovation contribute to the redefinition and reorientation of modernisation?

In WP 4, the **comparative analysis** for the 'knowledge and learning' theme across the national case studies will be led by: Talis Tisenkopfs (LV) and Karlheinz Knickel (DE).

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