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FoPIA-SURE-Farm 2 Case Study Report Romania

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1 Introduction

1.1 Main indicators, resilience attributes and challenges

The farming system is small mixed farms in the Nord-Est region of Romania. Its main characteristics are the prevalence of small farms - 95% of them have less than 5 ha UAA, and 77% of the farms are mixed (crops, livestock, grassland, sometimes fruit and vegetables).

The main functions of the agricultural system are providing healthy and affordable food products, economic viability, deliver products to the processing sector, economic viability (private functions). Protection of biodiversity & habitat (as public function) was also selected for further discussions. Table 1 shows the function indicators which were scored as best representing these functions; their performance was perceived to be moderate to good.

Table 1. Main indicators and their performance and development. Source: Gavrilescu et al., 2019

Main indicators	Current level (score 1:5)	Current level (explanation)	Current development
Sales of crop and vegetable products to processing	4.1	Lower than the potential due to the fragmentation of supply from small farms. Most of the small farms are semi-subsistence farms, they are consuming most of their output, and have weak connections with the markets.	The general trend of this indicator (after 2010) is downward because the small farms that are not included in associations / cooperatives are not able to meet the requirements of the major processing companies that are increasingly replacing the small local processors.
Subsidies	4.4	The level of subsidies is lower than in the older EU member states. Due to information campaigns, the small farms' access to subsidies has improved. Only half of the small farms have access to subsidies (size below the minimum thresholds).	The level of subsidies has increased continuously, as well as the number of beneficiaries, as the information campaigns reached their goal. Yet, there are continuous changes in the rules and conditionalities (ex. the agro-environment requirements), that farmers must comply with in order to receive financial support.
Awareness of biodiversity importance	2.9	Climate shocks (drought, floods) made small farmers more aware that preserving the environment and the biodiversity in the region can help mitigate the effects of climate change.	Since 2005, with the establishment and implementation of a set of cross-compliance rules, the level of awareness of the importance of biodiversity among small farmers in the NE region has increased.
Crop and vegetables production (thou tons)	3.9	Agricultural yields are lower than the EU average. Yet, there are large variations from one year to the next, caused mainly by climatic conditions (mainly droughts) and lack of irrigation facilities.	The new CAP (post 2014), which supports small farms as well, represents an opportunity for consolidation, technological gains and association, resulting in an upward trend.

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The resilience attributes are shown in Table 2. The top two performing attributes are best characterizing the farming system and are mostly related to adaptability.

Table 2. Main resilience attributes and their presence in the farming system. Source: Gavrilă et al., 2019

Main resilience attributes	Current level (score 1:5)	Current level (explanation)	Current development
Spatial and temporal heterogeneity (farm types)	3.6	95% of the farms in the region are small (less than 5 ha UAA); 77% of the farms are mixed.	The number of small mixed farms decreased in the last two decades, due mostly to land consolidation. Heterogeneity decreased as well, because medium-sized farms (over 20 ha of land) generally give up animal husbandry and focus on cereal crops due to labour unavailability.
Supports rural life	3.1	There is a lack of workforce in the region - few young people in the working age group. Living conditions are far from the those in rural areas in Old Member States.	There is an intense migration of young people either to towns, but mostly abroad. The living conditions started improving in rural areas due to investments (from Pillar II) in local water and sewerage facilities in many villages.
Legislation coupled with local / regional context	2.1	The current legislation and regulations are poorly adapted to the needs of small farms, and much more oriented to the needs of large commercial farms which are organized in powerful association and have an important lobby to support their interests.	Lack of association / cooperation does not allow the small farmers to have a voice in relations with authorities and policy makers.
Appropriately connected with actors outside the farming system	1.7	Poor inclusion of small farms in the value chains due to lack of association / cooperation which would facilitate supply concentration and improve their bargaining power with actors in the upstream and downstream part of the value chain.	Local processors are few, and most farmers are forced to sell directly to clients, or on local markets, but very few contracts

Main challenges for the farming systems are:

- poor integration of small mixed farms in agri-food chains;
- integration in the EU markets (competition with imported products);
- changing EU and national laws and regulations;
- climate / pests / diseases.

1.2 Participation in the workshop

The workshop took place on March 12, 2020, and there were 16 participants: farmers (6), provincial authorities (2), processors (3), local researchers (5).

During the preparation stage and based on the results in the first FoPIA workshop, the research team selected the main function indicators, resilience attributes and challenges to be discussed further (see previous section), and all the participants agreed with them.



2 Results

2.1 Maintaining the status-quo

2.1.1 Introduction

In order to keep the current system as it is, participants provided minimum or maximum levels of indicators, resilience attributes and challenges. In preparation of the workshop, the research team proposed for each indicator, resilience attribute and challenge some ideas (proxies) for expressing thresholds in a quantifiable way, to support participants to fill them in. They were agreed with the participants as initially proposed or changed based on the suggestion of the participants before each exercise.

2.1.2 Indicators

Sales of agricultural products to processing

In the discussions, participants pointed out that in the case of small farms, sales to processing units decreased in the latest years due to very low prices, and competition from imported products; consequently, the farms reoriented to direct sales (through customer lists for animal products), local markets (for fresh fruit and vegetables), and use of feed for their own livestock (maize, barley, oats). Therefore, the participants agreed to quantify the share of all sales of the farms as indicator. The opinions about the minimum share of the products that should be sold to keep the farm going varied quite largely, from 20 to 80% (calculated average = 49%).

On the other hand, participants considered that a higher share of sales would change the small farms into commercial ones, which would require extra effort for better logistics to facilitate sales, as well as changing the legal status, which would result in new types of relation with authorities, tax registration and so on. So, the maximum share of sales in order to maintain the status quo of the small farms varied from 60 to 100% (calculated average 79%).

Subsidies

All types of subsidies were taken into consideration, including agri-environmental payments. The level of subsidies indicated by the participants as minimum, below which farms would no longer be viable or require off-farm income sources in order to survive varied from 150 to 300 euro/ha (calculated average = 205.5 euro/ha). While most participants indicated levels of subsidies related to the land located in plain or hill areas, one participant pointed out that in mountain areas subsidies should be higher (400 to 800 euro/ha and 300 to 500 euro/head for cows).

The maximum proposed levels of (cumulated) subsidies needed to maintain the status quo varied from 250 to 800 euro/ha (calculated average = 405 euro/ha). A substantial increase of subsidies level above this threshold might trigger investment processes, such as land consolidation. As a

result, many small farms would disappear, and more medium-size commercial farms would emerge).

Awareness of biodiversity importance

It was somehow more difficult to set measurable thresholds for this indicator, but it was agreed to use as a proxy the share (%) of agri-environmental payments in the subsidies received by a farm. The minimum values ranged from 5 to 33% (22% calculated average), while the maximum values ranged from 15 to 120% (calculated average = 52%). The participant that wrote 120% on the post-it indicated that this should be for the mountain area, where subsidies should be higher than the current level, up to 240 euro/ha.

The participants agreed that the region has numerous amenities which can be exploited by tourism and preserving the landscape and the biodiversity would contribute to the development of agritourism.

Agricultural production

Regarding the agricultural production, there was a slight confusion about how to express the minimum and maximum levels, if the discussion was about the production of the whole region or at farm level. The participants agreed to indicate as thresholds yields for maize and dairy milk, average yields in the small farms. The calculated averages values on the post-its for maize yields were 4.6 tons/ha (minimum) and 9 tons/ha (maximum). Opinions varied more when discussing the milk yield: 4750 liters/year/cow (minimum calculated average level) and 6250 liters/year/cow (maximum calculated average level). One participant indicated that some farmers invested in small dairy farms using EU funds and a better feeding resulted in higher milk yields.

2.1.3 Resilience attributes

Spatial and temporal heterogeneity of farm types

The diversity of farms, crops and livestock species is in fact a characteristic of the studied farming system. In order to quantify thresholds, participants agreed to evaluate “the share of agricultural area occupied by small mixed farms”, bearing in mind that in order to maintain the status quo, that share could decrease down only to a certain point, beyond which the farming system would change into a specialized one. The values proposed by the participants varied between 20 to 70% (average calculated value = 45%) as a minimum limit to keep the heterogeneity of the system. The maximum value proposed by the participants varied widely, between 40 and 100%, with an average calculated value of 68%.

Supports rural life

Rural life relies on these small farms, because this is the real landscape, because the Romanian village means small households, which are essentially and mostly small mixed farms. To measure

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thresholds, participants agreed to use as proxy “diminishment by x% of the rural population”. Several participants indicated that in villages close to towns (peri-urban areas), the rural population doesn’t decrease, but, on the contrary, increases. There are several factors leading to this: people living in towns are buying land and houses to move to when they retire, small entrepreneurs in services, etc. The problem of rural population diminishment is harder in remote areas, people are migrating to urban areas or abroad. One participant pointed out that for a few years, there were some subsidies provided to farms or processing units to support the mobility of workers hired by farms, processing units or building sites. So, people were coming to work from areas located 50-60 km away. Currently, such subsidies ceased and in order to keep their workers, farmers and entrepreneurs are paying for transportation (as a bonus to the monthly wage), or they bought minibuses and are organizing daily transportation for the workers. In one LAG, a large farmer does that, and even provides accommodation for workers coming from more distant villages. As consequence, those workers do not farm their land (back home) anymore, they just rent it. For the minimum level, the post-its showed values ranging from 1 to 10% (average calculated value = 5%) decrease in rural population that would not influence rural life. On the other hand, an average (calculated) decrease in population exceeding 20% would affect significantly the rural life, mostly if (fact underlined by the participants) that further decrease concerns young people.

Legislation coupled with local / regional context

Adapting legislation to the needs of small farms is essential to their development, but currently it is not happening. To express thresholds, participants agreed to use as a proxy “share of small mixed farms that received financial support in the last 10 years” (any kind of subsidies, or financial support).

In the discussion it was reminded that many very small farms are excluded from direct payments because they have less than 1 ha, or plots less than 0.3 ha, or the minimum required number of animals. This is excluding about half of the total number of farms from direct payments or other types of financial support.

Most participants evaluated the minimum threshold between 30 and 85% (average calculated level = 52%). The maximum threshold (as tipping point to the change of the farming system from small mixed farms into medium-size specialized farms) was evaluated between 50 to 100% (average calculated level = 73%).

Connection with actors outside the farming system

The proposed threshold that could become tipping point was “share of small mixed farms that were included in a any form of association / cooperation in the last 10 years”, because participants agreed that only through associations the political decision can be somehow influenced.



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Moreover, only associations can represent and become a voice of the small farmers in relations with the central authorities (such as Ministry of Agriculture and Rural Development - MARD) and discuss the needed improvements and simplifications of the national regulations that affect the farming system.

An example was vividly discussed, because it illustrated the way the Romanian authorities imposed “unnecessary tougher rules” (in the participants’ opinion) as compared to similar rules in other Member States, thus strongly affecting in a negative way the economic viability and competitiveness of the Romanian farms as compared to farms in other MS.

It concerned the certification rules for organic products which are not the same in all MS; and they are more severe in Romania than in other MS. The same product (oil), with the same characteristics, if certified in Germany is organic, but if certified in Romania is not. So, if a Romanian producer tries to export it to Germany, it will be a conventional product, while the same product exported from Germany to Romania is organic. The certification rules depend on the national regulations imposed by the certification bodies in each country, so these tougher national regulations put the Romanian organic producers in a clear disadvantage as compared to foreign ones, prevents Romanian farmers to expand their organic production, to process the products and to supply domestic consumers with local organic products. The result is that most organic products on the Romanian markets are imported.

A participant raised the question if the official production control (for animals) should be included in these association forms, and the other participants’ answer was yes, since that association informs and guide the farmers on quality standards that allows them to enter the market.

The participants recognized during the discussions that although the National Rural Development Programme (NRDP) includes measures aiming at stimulating association, and despite the continuous efforts of the public consultants, farmers are still extremely reluctant to association. It is far easier to setup producers’ associations in areas which were not included in the communist-type “cooperatives”. Most older farmers are opposing openly to association, and younger farmers are not well informed or educated in this direction, except for those who worked abroad in farms in western countries and saw first-hand the advantages and opportunities offered by association. Financial support for association is important, but assuming responsibility by members is the driving factor.

The current situation is that quite a number of farms are included in various types of associations, but most of these associations (such as the ones of animal growers) are in fact only on paper. Farmers just pay a very small annual fee in order to get a membership certificate which is an eligibility condition for applying for animal subsidies.



The values on the post-its for the minimum and maximum level of the threshold resulted in average calculated values between 17% and 38%.

2.1.4 Challenges

Poor integration of small mixed farms in agri-food chains

This was identified as the main challenge faced by the small farms. The chosen quantifiable threshold was “the share of small mixed farms that sell less than half of their agricultural production”. If a farm sells less and less, it heads towards subsistence and poverty, so if the share of these farms (selling less than half of their production) increases, means that the whole region impoverishes.

Keeping that in mind, the minimum values written on the post-its ranged from 10 to 75% (average calculated level = 38%), while the maximum values ranged from 20 to 85% (average calculated level = 64%).

Integration in the EU markets (competition with imported products)

There is an important competition with imported products. The large processors prefer to use imported agricultural raw materials (milk from Hungary, meat from Poland, etc.), which are cheaper than the local products, and push down the prices, thus making some farmers to quit raising animals for selling meat. The threshold proposed by the research team was “by how much (%) have the selling prices of agricultural products changed in the last 10 years”.

One participant pointed out that also low-quality counterfeit products imported from other EU countries are also influencing the prices in a negative way. The discussed example was honey; on the domestic market, imported low-quality counterfeit products are much cheaper than the domestic produced products of good quality and prevent the producers to get the right prices. As a result, much of the production is exported.

Another participant pointed out that in the last 10 years prices did not decrease much, instead production costs increased significantly. For instance, diesel price doubled in the last 10 years, and labor costs increased as well. In the three counties of the Nord-Est region which have borders with Ukraine and Republic of Moldova, there is a certain influx of non-EU workers all along the agricultural season in the villages close to the border; they are well appreciated, because they are hard-working and have tradition and good know-how mostly for skilled operations in vine and fruit tree growing, and in beekeeping.



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It was argued that prices of important export products (such as sunflower seeds) did not vary very much in the last years (with very few exceptional short-time surge in prices), but the important thing is that the price is largely influenced by the EU market price and just to a very small extent by local conditions (such as yields or available storage facilities).

So, participants agreed to change the threshold into “by how much (%) have the *costs* of agricultural products changed in the last 10 years” (instead of *prices*). Participants estimated that changes in prices up to 30% (minimum average calculated level) were absorbed by the farming system; changes between 30 and 72% had an intense negative impact on the small farms (diminishing significantly their income), but anything beyond 72% (maximum average calculated level) pushed the farms to give up the specific activity concerned.

Changing EU and national laws and regulations

This was perceived as a huge obstacle in activity. National regulations are changing too often, farmers can barely keep up with the changes, and that creates problems in filling in the applications and in receiving the subsidies.

The participants expressed a major discontent with the fact that the Romanian authorities do not protect their own farmers. The example concerned eco-conditionality rules: the CAP proposed 11 different criteria to choose from to be imposed to farmers; Hungary chose only four of them, Poland also quite a few, while Romanian authorities chose them all to be fulfilled, thus disadvantaging its own farmers.

Participants evaluated as quantifiable threshold the number of years with unchanged regulations in the last 10 years, and the average calculated levels were 1.2 years (minimum) to 2.9 years (maximum), mentioning that there was even in the recent years a regulation that lasted 30 days only.

Climate / pests / diseases

Participants discussed that the frequency of droughts increased in the last two decades as a result of climate change; and coupled with the lack of irrigation infrastructure and lack of insurance instruments tailored to the needs of small farms results in frequent years with production losses. The number of years with more than 30% production losses in the last 10 years was quantified as threshold for the farming system; the participants evaluated that frequency higher than 4.4 years (average calculated value) could be a tipping point for the system. Participants pointed out that drought diminishes significantly the feed availability for livestock, pushing up the costs which are not covered by the price of meat and milk. Overall, with losses incurred in almost half of the years, the small mixed farming system is very vulnerable to climate, pests and diseases.



2.2 System decline

2.2.1 Introduction

In small groups, participants discussed one challenge and its impact on main indicators and resilience attributes, in case thresholds were exceeded.

2.2.2 Performance of indicators and resilience attributes

Poor integration of small mixed farms in agri-food chains

The system is expected to evolve towards increasing integration of small farms in the agri-food chains. This will result in a moderate positive influence upon increase of sales in the short term.

Some farmers will be more integrated in the agri-food chains and will prefer to better respond to the requirements of the supermarkets through production intensification which would bring them higher profits, rather than observing biodiversity. Other farmers wish to diversify production and farm activity by growing healthy products, protecting biodiversity, opening their farm for visiting urban children. They are favoring participation in short chains or direct sales.

Farm heterogeneity is likely to be increased by farmers who will respond to new consumer demand through production diversification. Supermarkets know how to channel such diversification: encouraging the farmers to collect and package their products and helping the farmers to create the necessary logistics for their deliveries. For the moment, this is feasible in the Nord-Est region only by Carrefour who has a local warehouse; all other retail chains have very few large warehouses located very far away (at least 300 km away).

As integration increases, more small businesses are expected to emerge, thus increasing the attractiveness of rural areas, which also have less bureaucratic requirements than the businesses located in urban areas.

Participants in the group identified two intermediary indicators through which legislation and rules could be influenced: farmers' association, and the extent of integration.

Legislation can be influenced only through association and/or integration of small farmers but will largely depend on the extent of the integration process and on the integrator's interests. Basically, the participants pointed out that if supermarkets (acting as integrators) are interested in supporting local farmers and promoting local needs, they can do that, because they are very powerful and can influence the policy makers to the benefit of all. The question raised by the participants was if the supermarkets are willing to do that, and if yes, whose interests will they promote: the local partners' or the foreign owners'?

In the participants' opinion, integration will be a rather slow phenomenon, so its influence will be moderate.

The COVID-19 influence was mentioned by participants; they pointed out the fact that the pandemic might have a positive effect on the integration of small farms into domestic agri-food chains due to the shortage of imported agri-food products.

Integration in the EU markets (competition with imported products)

After accession, small farmers started to feel the pressure from imported products coming from other Member States based on the free circulation of products in the Single Market.

Increased competition and larger imports (at generally lower prices) are having a strong negative influence on the sales of small farms. The participants emphasized the need and expectation that consumers would buy and consume agricultural products cultivated and harvested in Romania.

Generally, there is no apparent link between imports and subsidies, but an important exception appeared, benefitting the small farms: the "tomato programme". For quite a long time, Romanian farmers were very dissatisfied with huge vegetables (mostly tomatoes) imports, sold in supermarkets, while the domestic producers incurred important losses since they were not able to sell their tomatoes. The Ministry of Agriculture and Rural Development initiated a special state aid scheme aimed to increase domestic tomato production and sales on the domestic market, to concentrate production in small and medium-size farms and to encourage sales with proper contracts and documents, in order to diminish the "grey market" and fiscal evasion. Therefore, competition from imported products proved to have a moderate positive influence on subsidies.

Imports of various products (including organic ones) means also learning more about environment, biodiversity, organic production, selective waste collection, etc., therefore the influence was considered moderately positive.

More imported products have a strong positive influence on agricultural production, because it forces small farmers to increase production and productivity in order to remain in the market.

Also farm heterogeneity is influenced both ways: cheaper imported milk from Hungary pushed out of business local small dairy farms which could not sell anymore to processors (diminishing the number of dairy farms was a negative influence); on the other hand, other farmers saw opportunities in changing the farm activity and started growing new types of crops (Paulownia, sea buckthorn, cherry tomatoes, etc.), so diversifying and starting new types farms is considered a proof of a positive influence on heterogeneity.

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Competition from imported products does not support rural life; people are leaving the rural areas to work off-farm or abroad, they prefer to spend time at the malls in towns and buy (instead of producing) all the food. A participant remarked that this practice is completely opposite of what was happening some 40-50 years ago, when many people living in towns were sending their children in the countryside during the summer vacation; the reason was to spend more time in open air and eat “healthy food” from the grandparents’ garden.

In terms of influencing the legislation, the quality and appearance of imported products were seen again as positive and negative influencers. Positive because it can influence changes in food standards and correct labelling. In a negative way, because decision makers should learn from other MS (such as Spain, UK, Italy) how to adopt and implement rules and regulations aimed at protecting their own farmers.

Imports can moderately influence association: the pressure of low prices and abundant quantities of products should be an incentive for association in order to enable local producers to face such imports, and, in time, to produce more and better for the local markets. Yet, farmers involved in the same production branch are still unable to harmonize and are promoting diverging interests: an example is that of sheep farmers, which last year split in two different groups protesting in front of the Ministry of Agriculture and Rural Development, each group having different claims: one group wanted to promote live sheep exports, while the other - carcass exports.

Changing EU and national laws and regulations

The rules and regulations (European and national) are changing too often – this is the main complaint of the farmers in this respect, as well as that the legislation is oriented mostly to the needs of large farms, and not of the small farms which are the vast majority. Currently, in the large farms, productivity is similar to the high levels in other Member States. Small farmers are generally having rather low productivity, but which could double in three-year time if the national and European policies would be more oriented to them. In this case, in a few years, small farms could become development poles in the rural areas.

On the other hand, since accession, rules and regulations influenced strongly and positively the agricultural production mostly through the financial support provided by subsidies and development measures. Subsidies, although modest as compared to those in other Member States, cover an important share of the production costs, and they allowed small farmers to access more inputs to improve technologies and hence increase their productivity as compared to pre-accession period.

Increasing the awareness of biodiversity importance could benefit to some farmers (especially those located in mountain areas) when they will realize that they can earn more money by



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accessing the agri-environmental support measures rather than trying to earn money from active farming.

A large share of the animal production in the region (about 90%) comes from the small mixed farms. The present rules and regulations included in the NRDP are favoring the development of the farms. The increase in land area is generally resulting in increased specialization of farms as crop farms, and gradual decrease of animal husbandry activity, because the latter needs permanent labor, which is scarce in the region. As a result, in time, the farm heterogeneity is slowly decreasing.

The farmers in the group discussed also the opposite trend: an increase in farm heterogeneity. Farmers will try to respond to a new and diversified consumer demand by cultivating non-traditional crops and raising also non-traditional animal species. Increased income will support rural life, encouraging young farmers to stay and work in farming, and strengthening also the social function of the small farms.

The participants discussed also that simple, clear and favorable rules and regulations will foster farmers' association, which are expected to set the ground for sales to supermarkets. If the supermarkets establish a good collaboration with the farming system through the associations, they may be interested to lobby to the decision makers for new rules and regulations favorable also to farmers. After that, stability of those regulations becomes of importance for all partners in establishing business plans and contracts, consolidating mutual trust and creating a good business environment.

Climate / pests / diseases

Among the climate risks, droughts are most frequent in Nord-Est region. Their influence is strongly negative on the agricultural production, and hence on the capability of the small farms to sell their products. Recently also the African swine fever created problems in the farms that owned and raised pigs. When the influence of either of the three risk factors (drought, pests, diseases) is reducing the level of the output, the volume of sales is even more reduced, since in most small farms, part of the output is consumed on farm. Although being a separate indicator, in this case, agricultural production may become an intermediate indicator influencing the sales.

Subsidies are also influenced by the three risk factors; in case of severe disasters, an exceptional support may be granted to the farmers (either from European or from national funds). There are also more recent support measures for insurance, but small farmers are generally not accessing them.



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There is no apparent direct link with biodiversity, because the farmers must comply anyway with the agri-environmental conditions anyway, irrespectively from the occurrence of the risk factors.

Dealing with actors outside the farming system should be the main reason for association / cooperation. Another reason is the opportunity to manage risks such as the swine fever, when neighbors established “unwritten associations” in order to protect themselves collectively against the disease, by agreeing to observe rigorously together and all of them the imposed veterinary prevention rules, since one infection in one farm could mean killing the pigs in all the farms in the village.

A farmer mentioned that in this phase of incipient associations, the agents who are buying the farm products are attempting to prevent the formation of associations; they are trying to divide the farmers by negotiating separately with them in order to keep the prices low. The input suppliers are applying similar practices also.



2.3 Alternative systems

2.3.1 Introduction

In the preparation phase, the research team proposed six alternative systems, which were basically agreed by the participants, but in the discussions, they proposed to merge some of them, resulting only four alternative systems to be discussed:

- commercial specialization of mixed family farms;
- cooperation / multifunctionality;
- organic farming;
- alternative crops /livestock.

The discussions pointed out that in general, the alternative systems can moderately improve the functions and resilience attributes of the farming system, but also showed that in some cases, the alternative systems can induce strong positive changes (table 3). Most boundary conditions in the current and status quo are still relevant in the alternative systems, but in a selective way. The resilience attributes were generally perceived to be maintained or improve in the alternative systems.

Table 3. Current perceived performance of main functions and presence of resilience attributes (FoPIA-SURE-Farm 1) and their expected change in future systems. → implies no change, ↗ implies moderate positive change, ↑ implies strong positive change, ↘ implies moderate negative change, ↓ implies strong negative change, V implies that a boundary condition is relevant for a future system. Arrows and tick marks in bold font are results obtained in the workshop. Arrows and tick marks in normal font are deductions from what has been said in the workshop.

Indicator	Current level	Status quo	System decline	Future systems			
				Commercial specialization of family mixed farms	Cooperation / multifunctionality	Organic farming	Alternative crops / livestock
Sales of agricultural products	Low	→	↘	↑	↑	↑	↑
Subsidies	Low to moderate	→	→	↗	↗	↗	↗
Awareness of biodiversity importance	Moderate	→	↘	→	→	↑	↑
Agricultural production	Low	↗	↘	↑	↑	↗	↑
Spatial and temporal heterogeneity (farm types)	Good	↗	→	↗	→	→	↑
Supports rural life	Good	↗	→	↗	↗	→	→
Legislation coupled with local / regional context	Low	→	↘	↗	↗	↗	↗
Appropriately connected with actors	low	→	↘	↗	↑	↑	↑

Indicator	Current level	Status quo	System decline	Future systems		Organic farming	Alternative crops / livestock
				Commercial specialization of family mixed farms	Cooperation / multifunctionality		
outside the farming system							
Boundary conditions	Domain						
Level of support	Economic	V				V	V
Adequate financial instruments	Economic	V			V		
Input prices	Economic	V				V	V
Extreme weather events: drought	Environmental	V		V	V	V	V
Eco regulations	Environmental	V				V	V
Adequate legislation	Institutional	V				V	V
Bureaucracy simplification	Institutional	V					
Access to information	Institutional	V				V	V
Representation at political decision level	Institutional	V		V	V	V	V
Unbiased quality standards	Institutional					V	
Better agricultural education, knowledge and know-how	Social	V		V	V	V	V
Openness to cooperation	Social	V					
Labor availability	Social	V		V		V	
Acceptance of foreign workers	Social	V		V	V		

2.3.2 Commercial specialization of mixed family farms

This alternative system was seen by most participants as the most likely one, because it comes as a natural development of the small farm system with a certain commercial vocation. In general, participants expect the passage from the current stage to the alternative system through expanding the land (either by renting, or by buying land) and increasing the number of animals. Land is used in correct technological rotation of crops, including perennials fodder such as alfalfa, annual good quality grass mixtures and cereals. Most of the fodder crops are used as feed for animals (cattle, sheep, goats). Production is expected to increase, due to better technology.

Income from crop comes from sales of cereals (exceeding the need for feed consumption) and of other high-quality fresh products (vegetables, fruits). This alternative system is characterized by some circularity; manure is used in the farm, so are other residues.

Access to irrigation (where possible) is seen as very important, since drought was identified as the main risk factor.

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Income from animal husbandry comes from selling milk to local processing units or live animals to slaughterhouses. Current NRDP offers funds through several measures included in Pillar II for developing the farm, such as building new facilities for animals and buying high-quality animals.

Subsidies are essential for farm profitability.

The alternative system is more labor-intensive, and there is a need for permanent and seasonal workers, depending on the volume of animal husbandry activity, which might prove to be problematic, since there is a lack of workforce in the region, due to migration to urban areas or abroad. Availability of labor is an important boundary condition, and a possible solution would be hiring foreign workers (from Asia mostly). Currently, this is still difficult, due to complicated paperwork for non-EU personnel and also due to the fact that people's mentality is still hindering the adoption of foreign people in the community.

This alternative system contributes positively to the heterogeneity of the farming system, due to the multiple possible combinations in which it can come; innovation has also a major contribution to the numerous possibilities. It certainly supports rural life and contributes to improving it. Legislation can favor the system, through support instruments provided for installation of young / new farmers, and ease of access to various form of support. Farmers are more inclined to association / cooperation since the growth potential offered through association is more visible and helps developing better business models than in the semi-subsistence farms, but lack of education and proper mentality for association / cooperation may postpone the setup of successful associations (boundary condition).

Lack of powerful associations results in a poor representation of this alternative system at the level of public decision (another boundary condition).

Some of the strategies for this alternative system are similar to those of the current system of small mixed farms: better professional education, integration in functional associations to help farmers in better selling their products. Other strategies are linked to the provision of quality products.

2.3.3 Cooperation /multifunctionality

In this alternative system, farms are still small and mixed, but they are integrated in true and functional cooperatives. The cooperative plays an essential role in buying the needed inputs for the member farmers, and mostly in finding markets for them. In this system, the farmers are integrated horizontally and vertically. Multifunctionality refers to the fact that through the cooperative, complementary activities may occur, such as milk collection and primary processing, cereals, fruit and vegetable collection, conditioning and sales to large retailers (supermarkets).



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Subsidies are essential for the small member farmers, but supplementary support for the cooperative may be accessed.

Agricultural production is expected to increase moderately, since the farmers are still small, but the fact that they moved the marketing and sales task to the cooperative allow for technologies improvements resulting in moderate productivity increase.

Spatial heterogeneity is slightly decreasing, but small farms are consolidating. Legislation is still not favoring small farmers. This alternative system is supporting rural life, by retaining small farmers in the rural area and offering them better opportunities to obtain moderate profit in the small mixed farms.

Through the cooperative, the farmers are better connected with actors outside the farming system, such as consultants, input suppliers and wholesalers or retailers, but from a better bargaining position.

There are some specific boundary conditions linked to the legislative gaps for the small farmers, as well as the need for financial and insurance instruments tailored to their specific needs.

The strategies identified for this alternative system include: generational renewal in the small farms, improved professional education and continuous adult formation.

2.3.4 Organic farming

This alternative system is considered to be a good development direction. Romania has good conditions to extend this alternative system in the near future. There are many areas where, until now, extensive farming was practiced, with low chemical inputs, thus creating good premises for conversion to organic farming.

Organic production is expected to increase as such, but with far lower productivity as compared to conventional farming, due to specific requirements. Sales are expected to increase, since there is an increasing demand for organic and healthy food, although in urban areas mostly, where consumers have higher income and afford more expensive products. In the last few years, all supermarkets opened special selling areas devoted to organic products. Subsidies are essential for this alternative system.

Through proper rotation of crops, the requirements linked to the bans of chemical use can be met; as an example, introducing hemp in the crop rotation, it helps cleaning the weeds on the land. Lack of chemicals use contributes to maintaining natural biodiversity. This alternative system



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supports moderately rural life: it creates agricultural employment, but generally these jobs are not very attractive.

Current legislation provides poor support for this alternative system, especially in terms of certification rules, which are considered much too severe; they are more severe than the corresponding rules in other MS, thus putting Romanian organic farmers in disadvantage as compared to their peers in EU. Participants indicated that the current legislation is more hindering than stimulating for organic farming; it needs improvement. Connection with actors outside the farming system needs improvement, in terms of development of organic storage facilities and processing plants, which for the moment are quite underdeveloped, forcing most of organic producers to sell or export unprocessed products.

The major boundary conditions are those mentioned above: (need for) adequate legislation; availability of processing facilities; the cost of certification process, which currently is very expensive and is roughly costing as much as the current subsidy, leaving the organic farmer to support high production costs. The (much needed) presence of associations is another boundary condition in this alternative system.

The strategies the participants mentioned for this alternative system are: development of state certification bodies which should apply the same rules for all farmers; subsidies for the certification process; stimulating conversion to organic farming by land tax exemption; simplification of legal procedures, such as sample control of organic requirements, accompanied by very harsh sanctions if rules are breached.

2.3.5 Alternative crops /livestock

This alternative system is considered by the participants the least likely, but with certain development perspectives, because it provides niche products, which are sold at good prices. Sales of products increase significantly, up to 100%, through specialized outlets. Animal products are processed in special slaughterhouses with specific veterinary regulations (for example products from deer meat, wild pigs, etc.).

Farms growing alternative crops have also good developing perspectives (for example sea buckthorn, berries, asparagus, etc.) are very profitable, their products are in high demand either fresh, or with minimum processing (which is generally done on the farm premises, such as conditioning, packaging, freezing). Outlets include restaurants, cosmetic producers and export markets.

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This system is best contributing to biodiversity, since the alternative animal species are growing basically in extensive systems, close to the natural conditions. This is less valid for alternative crop products, for which more intensive growing technologies have been developed.

There are some major boundary conditions, such as the availability of subsidies for alternative crops and animals. There are also some specific and tight regulations for some species; an example is that wild pigs cannot be raised in farms, only half-breeds, and the meat products have special rules for processing, since they are generally assimilated with game products, and need supplementary food safety rules.

Since these alternative crops and species are rather new in the agricultural landscape, and very few specialists are able to provide proper consultancy, availability of information is another boundary condition.

The strategies identified for this system include improved professional education, and development of such farms in areas which are generally improper for other crops or livestock (high hills, semi-forest and mountain areas, etc).

2.4 Strategies towards the future

Participants mentioned that although the proposed alternative systems seem different at first sight, they are likely to create a more complex vision of the future of the farming system. They are complementing each other into a complex model of small and medium size farms in the farming system. Most past and current strategies considered for the small mixed farms are applicable for the proposed alternative systems, such information actions, promoting quality products, creation of producers' associations / cooperatives, introduction of modern technologies.

In all the alternative systems, the proposed strategies will most probably affect in a positive way the main indicators and resilience attributes, such as increasing agricultural products sales, contributing to farm heterogeneity, support rural life and – most important - promote association / cooperation.

The presence of association has been mentioned in all current and alternative systems as the main boundary condition. Most past strategies remain valid also for the future alternative systems, and they are expected to have positive impact mostly on the adaptability, and at a lesser extent, on transformability.



D5.5 Impacts of future scenarios on the resilience of farming systems across the EU assessed with quantitative and qualitative methods

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Table 4. Current strategies and future strategies for different future systems. Current strategies are based on FoPIA-SURE-Farm 1. Bold font indicates that these strategies were mentioned during the workshop for a specific system. Normal font indicates that, based on the discussions during the workshop, it seems likely that strategies will be applied in certain systems.

Strategy	Domain	Current system		Future systems			
		Status quo		Commercial specialization of mixed family farms	Cooperation / multifunctionality	Organic farming	Alternative crops / livestock
Information actions	agronomic	V	V	V	V	V	V
Ensuring the correctness of paperwork	institutional	V	V	V	V	V	V
Quality rather than quantity	institutional			V		V	V
Creation of producers' associations / groups	economic	V	V	V	V	V	V
Informing campaigns regarding the eco-conditionality rules	institutional	V	V			V	
Regulations / sanctions / penalties coming from authorities	institutional	V	V	V	V	V	V
Land consolidation and technologization	economic	V		V		V	
New technologies, new machinery and equipment adapted to the needs of small farms	agronomic	V			V		
New crops / varieties to improve diversity.	agronomic	V			V	V	V
Diversification of activities; farm products processing	economic	V		V	V		V
Expansion of organic farming	economic					V	
Succession could be stimulated by offering old retiring farmers decent pensions or life annuities, and to young farmers easier access to finance and adapted financial instruments for funding operating capital and investment capital	social	V	V	V	V		
For unskilled labour: continuous adult training and programs for exiting agriculture	social	V	V	V			

D5.5 Impacts of future scenarios on the resilience of farming systems across the EU assessed with quantitative and qualitative methods

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Strategy	Domain	Current system		Future systems			
		Status quo		Commercial specialization of mixed family farms	Cooperation / multifunctionality	Organic farming	Alternative crops / livestock
For skilled labour: better adaptation of school / university training to the demand in the agricultural sector	social	V	V	V		V	V
More stable policies and fiscal regulations	institutional	V	V	V	V	V	V
Improved consultancy system	institutional	V	V	V	V	V	V
Facilities and incentives for cooperation	institutional	V	V	V	V	V	V
Funding / credit instruments adapted to small farms to enable their development and enlargement to medium-sized farms	institutional	V		V	V	V	
Technological and managerial improvement to cope with climate changes	environmental	V	V	V	V	V	V
Insurance instruments adapted to small farms	economic	V	V	V	V		
Diversification of activities	economic	V		V	V		V

3 Interpretation

3.1 Tipping points

The current farming system seems to be not very close to tipping points. In case of sales of agricultural products, yet, the current 50% level of sales is close to the average minimum point (49%), but according to some participants the critical threshold was as low as 20%. The general impression is that the current system is not going very well, is facing many challenges and has a long list of boundary conditions.

The resilience attributes “Coupled with local and natural capital (legislation)” and “Appropriately connected with actors outside the farming system” are poorly performing in the current system and they are the main directions for improvement in order to evolve to all alternative systems (adaptability or transformability).

3.2 Thresholds exceeded

Sales of agricultural products is an important indicator for the farming system. Participants considered that a higher share of sales (exceeding maximum tipping point) would change the small farms into commercial ones, which would require extra effort for better logistics to facilitate sales, as well as changing the legal status, which would result in new types of relation with authorities, tax registration and so on. On the other hand, exceeding the minimum threshold would mean a decrease in sales, changing the status of the farm in subsistence farm.

As for resilience attributes, most discussed was “Connection with actors outside the farming system”. The proposed threshold that could become tipping point was “share of small mixed farms that were included in a any form of association / cooperation in the last 10 years”. The current situation is that quite a number of farms are included in various types of associations, but most of these associations (such as the ones of animal growers) are in fact only on paper. Farmers just pay a very small annual fee in order to get a membership certificate which is an eligibility condition for applying for animal subsidies, but in reality, the minimum threshold is close to zero. The main challenges faced by the farming system and that remain valid also in the alternative systems are “changes in the rules and regulations” and “climate / pests / diseases”. For both of them the minimum and maximum tipping points are very close, so more than one strategy is needed to face these challenges.

Figure 1 shows the interaction of thresholds that might lead to system decline, centered on decline of economic viability, combined with insufficient support and opposition to cooperation.

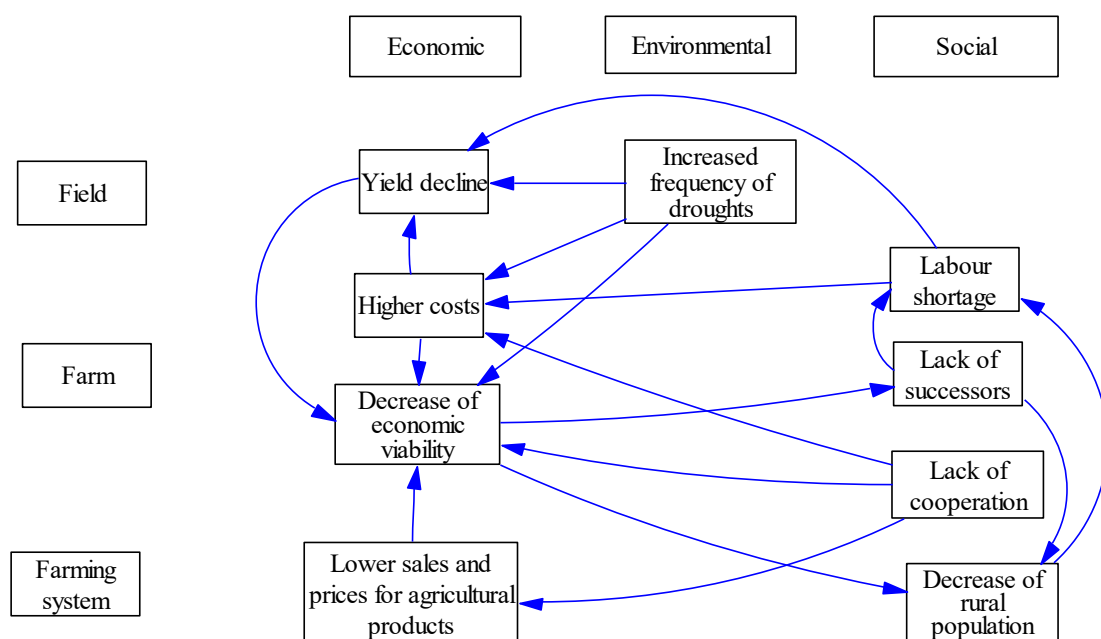


Figure 1. Interacting thresholds in the farming system.

Prices for domestic agricultural products have decreased as competition from EU-imported agri-food products has intensified. The low level of cooperation (characteristic for the farm system in the region) results in a low level of market integration. In the absence of domestic organized supply, the competition of low prices of imported products in the supermarkets further diminishes the small farms' opportunities for market integration, thus negatively affecting their economic viability.

The low profitability of small-scale agriculture makes this activity unattractive for potential successors, which are looking for better occupational alternatives in urban areas or abroad. The migration of the young rural population (which, in general, has a higher level of education) generates a deficit in the labor market that, implicitly, translates into an increase of labor costs in the farm system.

Higher prices of agricultural inputs and labor result in a declining trend of input quantities used in the farms, leading to declining yields. These trends have a negative influence on the profitability of small-mixed farms.

Climate changes, particularly drought, which lately increased in frequency, significantly affects agricultural yields, and generates additional costs with inputs needed to combat the effects of extreme weather events (such as irrigation).

3.3 Alternative systems

Performance of main indicators is expected to improve in all alternative systems (table 3). “Sales of agricultural products” is the best performing indicator, since it is expected to increase in all alternative systems (strong positive change). “Agricultural production” is also expected to increase in all alternative systems, moderately in ‘Organic farming’, and strongly in the other systems. “Awareness of biodiversity importance” will most probably show a strong positive change in ‘Organic farming’ and in ‘Alternative crops /livestock’.

Resilience attributes show generally a moderate positive change. Systems ‘Commercial specialization of mixed family farms’ and ‘Alternative crops and species’ will most probably enhance the spatial and temporal heterogeneity of farms”. Most alternative systems show no change in the attribute “supports rural life”.

There are no indicators or resilience attributes to show negative changes in alternative systems.

3.4 Causal loop diagram

There are many loops in the farming system, but some of them are of importance. Access to the European single market, and in particular, free movement has two negative implications for the system of small mixed farms in the NE region: increasing the supply of agri-food products at low import prices and the external migration of younger workers looking for better paid work.

Balancing loop (B1,2): Imports of low-priced agri-food products force a downward alignment of prices on the domestic market, making the small farms unprofitable; as a result, they diminish their production since the market no longer pays for their efforts. Hence farm incomes are declining, and small-scale agriculture becomes an increasingly less attractive activity from an economic point of view. As a consequence, some farmers exit the system by selling or renting their land to larger, more viable farms. Large farms are strongly commercially oriented and, in order to be efficient, they specialize. Keeping that in mind, there are two different directions for the evolution of the farm system in the NE region which will co-exist: i) an intense concentration of land operation in very large farms (operating thousands of hectares) and which, in general, are practicing an industrial-type farming, dominated by cereals and / or oilseeds; ii) a moderate land

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concentration in medium-sized family farms, commercially oriented, which seek to cover local market niches by specializing in new crops and / or livestock, or in organic production. Both directions of evolution lead to the decrease of the spatial heterogeneity specific to the small farms system, but, at the same time, favors the integration in agri-food chains because: i) the supply of large specialized holdings meets the requirements of product homogeneity and quantity required by processors and exporters; and, ii) the supply of medium-sized family farms responds to the new preferences of local consumers; in this case, the integration in the agri-food chain is often organized in short supply chains.

By concentrating the operation of agricultural land in very large, intensive, and very narrowly specialized holdings, a radical change occurs in the specific agricultural landscape of the region, previously characterized by a mosaic of crops and livestock.

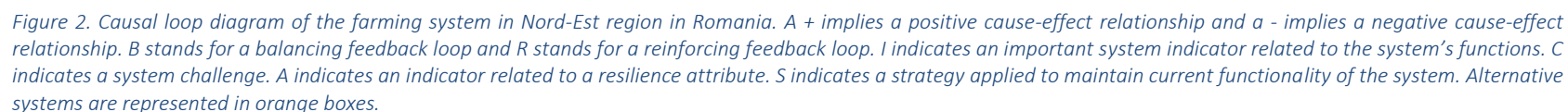
Reinforcing loop (R1): The introduction of new crops and animal species at the level of family farms contributes to maintaining the local territorial heterogeneity, contributes to the integration in agri-food chains of new products by increasing the sales of agricultural products, which results in increasing the farm income, which can allow for innovation and new products.

Reinforcing loop (R2): The strategy of orienting small farms towards organic farming is positively correlated with the level of awareness of biodiversity importance, since organic farms are more inclined towards nature conservation, thus contributing to the preservation of traditional rural life. Moreover, a higher awareness of biodiversity in organic farms leads to an increase in the level of subsidies (especially transfers for environmentally friendly agricultural practices), with a positive impact on farm income. This reinforces the orientation to organic farming.

Reinforcing loop (R3): On the other hand, small farms have mechanisms to keep themselves on the market. These farms can reunite in producer associations to be able to provide an aggregate response to the demand for agricultural products by the processing industry and retailing system. Functional producer associations facilitate increase of agricultural production and sales, while increasing the chances of integration of small farms into agri-food chains and improving their bargaining power with upstream and downstream actors in the chains.

The migration of the rural population to urban areas or abroad generates demographic decrease, rural aging, hinders generational renewal and creates the premises for land concentration in larger farms. It results in a decrease in the number of small rural households, which represent the main responsible for preserving the rural traditions and lifestyle. The shortage of labor in rural areas as a result of migration results in increased farm operating costs and leads small farmers to change their production structure into less labor-intensive activities (for example, by abandoning vegetable growing or animal husbandry and reorienting to field crops), or to simply exit farming.





Reinforcing loop (R4): One of the main identified challenges – poor integration in agri-food chains results in low sales of agricultural products and low farming income. This might push small farmers to exit the system, selling or renting the land to large agricultural farms which concentrate the land. This type of specialization diminishes the spatial heterogeneity of farms and increases the integration in agri-food chains. Otherwise, in the current status quo, a higher heterogeneity is diminishing the capability of small farms to integrate in the supply chains.

3.5 Linking alternative systems to scenarios

Maintaining status quo of the farm system and the first two alternative scenarios ('commercial specialization of family mixed farms' and 'cooperation / multifunctionality') are moderately compatible with three future scenarios: EUR-Agri-SSP1 ("agriculture encouraged for sustainability), Eur-Agri-SSP2 (agriculture kept on established paths) and EUR-Agri-SSP5 (agriculture boosted by technology).

For maintaining the status quo, the highest score appears linked to the SSP2 scenario; indeed, it took some time for the small farmers to adapt to the new market environment and rules imposed by the access on the Single Market as a result of the EU accession. A high score is also linked to the SSP-5 scenario, because the current trend is to increase the agricultural output based on production intensification (better technologies). 'Commercial specialization of family mixed farms' and 'cooperation / multifunctionality' show also a moderate compatibility with SSP-5 scenario: both are based on increased agricultural output through investment in farm equipment and modern technologies.

As expected, 'organic farming' and 'alternative crops/livestock' show a very strong compatibility with the SSP-1 scenario (agriculture encouraged for sustainability).

All alternative systems are compatible with the SSP2-scenario (agriculture moves through established paths). The participants pointed out that Romanian agriculture had a handicapped start in improving efficiency and profitability as compared to other MS, therefore it still needs efforts to achieve higher standards in production and competitiveness on the domestic and international markets, before moving to "greener" ways of development. The proposed alternative systems are in line with that target, but without refusing the eco-friendly view.

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Table 4. Compatibility of alternative systems with different Euri-Agri-SSPs. Where values -1 to -0.66: strong incompatibility, -0.66 to -0.33: moderate incompatibility, -0.33 – 0: weak incompatibility, 0-0.33 weak compatibility, 0.33-0.66: moderate compatibility, and 0.66-1: strong compatibility.

Systems	Scenarios				
	SSP1	SSP2	SSP3	SSP4	SSP5
Maintaining status quo	0.43	0.49	-0.61	0.27	0.45
Commercial specialization of family mixed farms	0.52	0.37	-0.64	0.22	0.35
Cooperation / multifunctionality	0.51	0.37	-0.64	0.22	0.36
Organic farming	0.68	0.42	-0.66	0.19	0.32
Alternative crops / livestock	0.66	0.41	-0.64	0.19	0.32

All the considered alternative systems are strongly incompatible with the SSP3 scenario (agriculture controlled inside national boundaries and distancing from EU), because EU accession provided important support and opportunities for all Romanian farms, either large or small, specialized or mixed. Of all, ‘organic farming’ shows the lowest score (strong incompatibility), since the largest part of organic products are mostly exported on the EU market, and domestic demand is expected to increase slowly.

3.6 Strategies

Participants mentioned that although the proposed alternative systems seem different at first sight, they are likely to create a more complex vision of the future of the farming system. They are complementing each other into a complex model of small and medium size farms in one farming system. Most past and current strategies considered for the small mixed farms are applicable for the proposed alternative systems, such as information actions, promoting quality products, creation of producers’ associations / cooperatives, introduction of modern technologies and managerial improvements to cope with climate changes, more stable policies and regulations.

In all the alternative systems, the proposed strategies will most probably affect in a positive way the main indicators and resilience attributes, such as increasing agricultural products sales, contributing to farm heterogeneity, support rural life and – most important - promote association / cooperation.

4 Conclusion

Analyzing the proposed alternative systems, it shows that the current small mixed farming system is very much adaptable (can satisfactorily become commercially specialized or become multifunctional if it is included in real and effective cooperative). They choose to adapt also by better satisfying the local demand through short supply chains. Another form of adaptation is to actively look for uncovered market niches to address with their products (this resulted also from respondents to learning interviews and participants in risk management strategies workshop).

Currently, there is a certain capacity for transformation: some small farms sell or lease their land to large farms, highly specialized in cereals and oilseeds production (for processing or export). There is also capacity for a part of the small farms to transform by engaging in alternative crops / livestock. The orientation towards organic production is growing from year to year, especially in small mixed farms located in hilly and mountain areas, specialized in animal husbandry. In the short and medium term, an important impediment to this alternative is the low demand for organic products on the domestic market (due to high prices that only a small part of the population can afford) and strong competition on international markets.

Participants discussed that, given the current farming system, robustness (although intrinsically present in the current system), is not a desirable resilience capacity for the alternative systems, at least until they develop properly.

The cooperation alternative was perceived by the participants as highly desirable, but its implementation, although very necessary for the integration of small farms in the agri-food chains, is hampered by the memory of negative experiences of agricultural cooperatives during the communist period and also by the lack of interpersonal trust between potential members (as resulting also from previous SURE-Farm interviews and workshop on risk management).

Many proposed strategies were identified for all alternative systems, showing that there are some basic problems that need to be addressed irrespectively of the desired farming system.

All alternative systems require important changes of attitudes (toward increased cooperation), as well as changes (improvement and simplification) in the rules and regulations. It is expected that not all alternative systems will be implemented as such, but more likely a combination of them, in order to move in the future to a more efficient and sustainable farming system.

5 References

- Cabell, J.F., Oelofse, M., 2012. An Indicator Framework for Assessing Agroecosystem Resilience. *Ecol. Soc.* 17, art18. <https://doi.org/10.5751/ES-04666-170118>
- European Commission, 2020. Key policy objectives of the future CAP | European Commission [WWW Document]. URL https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap/key-policy-objectives-future-cap_en (accessed 2.13.20).
- Gavrilescu, C., Tudor, M., Voicilas, D., Luca, L., 2019, 'FoPIA-Surefarm Case-study Report Romania'. In: Paas, W., Accatino, F., Antonioli, F., Appel, F., Bardaji, I., Coopmans, I., Courtney, P., Gavrilăscu, C., Heinrich, F., Krupin, V., Manevska-Tasevska, G., Neumeister, D., Peneva, M., Rommel, J., Severini, S., Soriano, B., Tudor, M., Urquhart, J., Wauters, E., Zawalinska, K., Meuwissen, M., Reidsma, P. D5.2 Participatory impact assessment of sustainability and resilience of EU farming systems. Sustainable and resilient EU farming systems (SURE-Farm) project report. Available at: <https://surefarmproject.eu/wordpress/wp-content/uploads/2019/06/D5.2-FoPIA-SURE-Farm-Case-study-Report-Romania.pdf>
- Mitter, H., Techen, A., Sinabell, F., Helming, K., Kok, K., Priess, J., Bodirsky, B., Holman, I., Lehtonen, H., Leip, A., Le Mouél, C., Lotze-Campen, H., Mathijs, E., Mehdi, B., Michetti, M., Mittenzwei, K., Mora, O., Øistad, K., Øygarden, L., Reidsma, P., Schaldach, R., Schmid, E., Webber, H., Schönhart, M., 2019. Developing a protocol for establishing new storylines that extend the Shared Socio-economic Pathways and inform integrated assessments of European agricultural systems.