

Strengthening the adaptive capacity of rural communities: multifunctional farms and village action groups

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Abstract: Farms are rapidly closing down in less-favoured areas in Sweden. While farms in the plain areas grow bigger, many farms in less-favoured areas find themselves in an unviable economic situation. While all farms are multifunctional, some farms can give rise to more functions than others, which in turn favours the economic, social and ecological development of rural areas to differing degrees. Thus, the question is what rural communities lose as their farms close down. In this paper we therefore explore two interrelated issues. The first is what role multifunctional farms have in strengthening adaptive capacity of rural communities. The second question is how village action groups can act in order to strengthen local multifunctional farms. Four rural areas in Sweden contribute with insights into these issues. In all four areas, agriculture was found to be vital for achieving what village activists considered desirable: an open landscape and increased local processing and marketing of food. A number of social, ecological and economic functions were found that farms contribute to the rural areas in order to strengthen their adaptive capacity. Multifunctional farms support the local economy since these farms typically have many economic and social interactions locally. They are also more likely to sell their products locally, since they are more prone to be directed towards the local market rather than the national market. The presence of active village action groups in all four areas helped to take action in order to support local agriculture. For example, village action groups created local meeting places and processing plants. They built social networks and enhanced diversity. However, village action groups are mainly able to work on the local level. Thus, it is crucial that policymakers also find ways to support multifunctional farms now while they are still in business, before knowledge is lost.

Keywords: multifunctional farms, adaptive capacity, resilience, rural development, village action groups

Introduction

The majority of Swedes are no longer engaged in primary production and agriculture is no longer the sole actor in rural development. In other words, the "rural" is no longer synonymous with being farmers (cf. van der Ploeg et al., 2000). At the same time, farmers are still key managers of natural resources. Farm activities form the cultural landscape and thus have a large impact on rural areas.

Swedish agriculture is currently experiencing two parallel and interrelated trends, namely intensification and extensification. Intensification is shown in the fact that farms grow bigger, become more specialised and that production output per hectare is increasing. Intensification means intensive use of external inputs such as fossil fuels, fertilisers, feed and pesticides, substituting for human labour and land resources (Björklund et al., 1999). This trend is most prevalent in southern plain areas in Sweden. In areas where structural conditions to specialise are less favourable the trend is towards more extensive use of land and animals, the most extreme being farms taken out of production. This is a widespread process in areas where the landscape mosaic does not allow farm enlargement and where distance between farms is big. Such areas comprise a large part of Sweden and they have seen a downward trend of agriculture over the last 70 years (Swedish statistics, 2006). In this paper, these areas are called less-favoured areas. As economies of scale develop in plain areas, the relative costs of agricultural production increase in less-favoured areas, decreasing their competitiveness. Intensification and extensification has resulted in fewer farms and an agriculture focused on the national and global markets rather than a local or regional market. In this process, agriculture has lost its previous position as base for rural development (Westholm and Amcoff, 2003) and its role as food provider for local rural areas. Rather, in many less-favoured areas farmers are paid more for keeping the landscape open than for the food they produce. In effect, instead of countrysides of production, countrysides of aesthetic consumption occur (Slee, 2005).

Multifunctionality is a feature of all farms. However, some farms give rise to more functions than others, which in turn favours the economic, social and ecological development of rural areas to differing degrees (cf. Björklund and Milestad, 2006). In this paper, multifunctional agriculture is defined as a local function, i.e. all the social, ecological and economic functions a particular farm has in the community the farm is placed in. In the path of modernisation the general multifunctionality of farms has decreased (Pretty, 1998; Westholm and Amcoff, 2003). Mechanisation and specialisation, both on farm and regional level, has led to an impoverished agricultural landscape and less support from agriculture to ecological functions (Björklund et al., 1999; Donald et al., 2001). Larger farms, less local markets and less employments in agriculture have reduced the amount of ecological and social functions associated with farming (van der Ploeg and Renting, 2000; Darnhofer, 2005).

Adaptive capacity is the ability of actors to manage a system successfully in terms of sustainability or social-ecological resilience (Walker et al., 2004). Adaptive capacity of rural communities is a prerequisite for their resilience. Resilience is the capacity of a system to absorb disturbance: to undergo change and still retain essentially the same function and structure (Walker et al., 2004). In other words, resilience is the capacity to cope with change. A social-ecological system, such as a rural community, with low adaptive capacity is more vulnerable to shocks, disturbances and sudden changes. In the current context of climate change, changes in policies and fast economic changes, building resilience in rural areas is vital. Since adaptability is the capacity of actors in a system to influence resilience, and as this is mainly a function of the individuals and groups acting to manage the system (Walker et al., 2004), social issues are in focus when discussing adaptive capacity. However, the link to the ecosystem needs to be kept in mind. By knowing and understanding their social-ecological system, local actors have the potential to build social-ecological resilience. This can include bridging between different scales of management (Olsson et al., 2007), enhancing diversity (cf. Elmqvist et al., 2003) and building social networks and trust (Walker et al., 2006). Currently more than 4000 village action groups are working all over Sweden in different ways to strengthen their communities. Many of these groups are active in rural areas, concerned with the viability and attractiveness of the areas. Even if this normally would include farming activities, there is no strong tradition of working with farmers in these groups.

In this paper, we explore two interrelated issues. The first is what role multifunctional farms have in strengthening adaptive capacity of rural communities. The second question is how village action groups can act in order to strengthen local multifunctional farms. Thus, we take an integrative approach to the resilience of rural communities and the social and environmental impact of farming (cf. Brodt et al., 2006). We try to connect the resilience of the rural community and the multifunctionality of farms in order to better understand how farms influence rural development in these areas, and how village action groups can influence the survival of agriculture.

Materials and methods

Four rural areas in Sweden were selected from a larger rural development project including 14 pilot areas in Sweden¹. The study areas were chosen in places where a village action group is working actively with issues of farming. A geographic spread was also aspired. The aim was not representability but the emergence of a rich picture. In all study areas most people commute to nearby towns to work. In each area, the active members of the village action groups consisted of 5-10 people. The four rural areas are briefly described below.

Bokenäset is a peninsula on the west coast of Sweden with 5000 inhabitants in five villages, 300 farm holdings and 11 full-time farms. The production ranges from vegetables, berries, milk and meat, to eggs, cereals and potatoes. The area is only a couple of km away from a larger town and within commuting distance to Sweden's second largest city. The number of farms that are transformed to horse-holdings increases, land prices are high and there is a high influx of summer tourists. The number of summerhouses almost equals the number of year-round homes (1700:1800). Summer tourism is not directly dependent on farming (swimmers and sailors can enjoy the beaches independent of the landscapes on land). Many people on the peninsula do not have a strong identity as *Bokenäset* residents. The village action group was formed when the new road to town was inaugurated.

¹ The project "Sustainable Villages" was carried out by the Village Action Movement in Sweden 2003-2006. The aim was to show a diversity of sustainable rural development in less-favoured areas in relation to natural resource management.

Hulta is situated in central South Sweden in a mosaic farming landscape. In three small villages with a total of 50 households, there are five farm holdings of which two are full-time farms. Milk, meat and cereals are the main products. However, inhabitants and one farm have developed cooperation around recycling nutrients and growing food together. Together they form the village action group. The farm produces milk and meat, but also offers a number of services to the villagers such as land for potatoes, nutrients for home gardening and a farm shop. *Hulta* is situated 30 km south of a middle-sized town where most inhabitants work and go to school. Many of the inhabitants have moved to *Hulta* as adults. Social networks are strong and the inhabitants organise a number of common activities.

Tived is a sparsely populated, heavily forested area in central South Sweden with 335 inhabitants and 10-20 active farms but no full-time farms. There is one main village and smaller settlements spread out in the forest. Farms mainly produce meat from suckler cows and sheep. A state company owns 95 % of the forest. Many farms were deserted and forested in the 1960s. In *Tived*, an individual farmer can be responsible for managing the landscape of whole settlements. The village action group cooperates with neighbouring groups closer to the central town, which is 10 km away. The next middle-sized town is 60 km away. One of the first tasks of the village action group was to try to save the school from closing down. There is a high level of activism among the village action group members, trying to attract more people to the area and make farming viable.

Trönö is a 25 km long forested valley in Northern Sweden with 900 inhabitants in 17 villages and 15 active farms of which four are full-time farms. Farms produce cereals or grass according to the EU subsidy rules. The full-time farms that are left produce milk. Farms normally have approx. 30 ha of farmland and 100-400 ha of forest. In the end of the valley is a lake, which attracts tourists and summer residents. *Trönö* lays 30 kilometres inland from the east coast and 30 km away from the central town. *Trönö* has a strong local identity, a number of local meeting places and a long tradition of associations and cooperation. The village action group was formed as the municipality closed down the *Trönö* fire station and the group formed a voluntary fire brigade.

This was an explorative study. A one-day workshop with active members of the local village action group was carried out using participatory methods and tools (Pretty et al., 1995) where we focused on the economic, social and ecological links between local farms and the rural community. In total, 26 members of village action groups participated in the four workshops. The village action groups recommended farms that were multifunctional in different ways in their view. Four to seven farmers were interviewed in each place, using semi-structured interviews. In total, 17 farms were visited. The farmers were asked about their role for the rural area, how this role had changed over the years and how they anticipated the future. They were also asked about the possibilities for developing their farms and the obstacles they saw for this development. The aim of interviews and workshops was to create a rich picture of possible functions farms could have for the benefit of the rural community. All interviews were taped and transcribed. The transcripts were analysed on their content, focusing on the functions of the farm, the contribution of the farm to rural development and how the village action group could work for the farmers. Data on the economic situation of the farm was collected as well as data on production and material flows. On each farm, a farm walk was conducted after each interview. All areas were visited twice. The second time, the researchers presented preliminary results and invited the participants to comment and adjust the findings. In total 47 inhabitants and farmers participated in these seminars. In a final phase of the research, a resilience analysis of the rural areas was made with reference to the steps recommended by the Resilience Alliance (2007). The first step was to analyse what system actors consider being desirable (Carpenter et al., 2001). The second step was to analyse *to what* the system needs to be resilient. That is, what disturbances that the rural area and its agriculture need to be able to meet and buffer against. Further, slow and fast variables within the rural community are vital for assessing and understanding its resilience. Typically, three to five slow variables are the main drivers of systems (Walker et al., 2004). If they can be identified, adaptive capacity can be developed to monitor and manage these variables.

Results and discussion

The multiple functions of farms

In this paper, multifunctional agriculture is defined as all the local functions a farm has in the rural area. A function can be described as a service to the local community from agriculture. From the interpretation and analysis of interviews and workshops with farmers and village action groups the researchers developed a table of the functions that were mentioned and/or observed by the researchers. The functions have been organised into social, ecological and economic functions (table 1) and are briefly explained below (for an extended description, see Björklund and Milestad, 2006). Generally, the more interactions between the farm and the surrounding rural area, the more functions can be expected from a farm. Due to the differing character of the different functions, only a qualitative analysis was made and the functions are not weighted or ranked in any way. Also, farms were not compared. Thus, table 1 should be read as the accumulated potential of functions of farms in the four areas.

Table 1. The social, ecological and economic functions of farms in the study.

Social functions	Ecological functions	Economic functions
Farms are meeting place for villagers	Farmers maintain and enhance biological and genetic wild diversity	Farms produce food and fibres
Farmers have machines possible to use for social activities	Farmers maintain and enhance viable populations of wild species	Farmers maintain roads important to all inhabitants
Farms are places for social activities	Farmers maintain and enhance biological and genetic on-farm diversity	Farms create local job opportunities
Farms represent cultural heritage	Farmers create landscape heterogeneity and maintain landscape mosaics	Farmers have machines possible to use for other activities than farming
Local farms offer knowledge on where the food comes from and how food is produced	Farmers maintain and increase soil fertility	Farmers have buildings possible to use for other activities than farming
Farms create feelings of safety and trust since someone is at home at most times and since the farmer is known to most people	Farmers have local ecological knowledge	Farms engaging in local selling offer products with added value
Farmers create an aesthetic open landscape	Farms can be places for recycling of nutrients locally	Farmers have available risk capital for investments
Farmers create the cultural landscape	Agriculture creates a different micro-climate and local water flows	

Social functions

The activities of farmers create an open landscape, so cherished by the rural population in Sweden. In most cases, the creation and maintenance of an open, cultural landscape was the main reason village action groups took an interest in local agriculture in the first place. Farmers also mainly mentioned an open landscape as their main contribution to the rural area. They were proud to produce an aesthetic landscape in which people were willing to live and settle.

The fact that farmers create a cultural landscape adds to the quality of the open landscape. Farming is a cultural activity, upholds cultural heritage, creating marks in the landscape (cf. Daugstad et al., 2006). The landscape is a combination of aesthetics (beautiful views) and function (production of food and biodiversity). The open cultural landscape is vital in maintaining the village structure in the valley in Trönö. In Hulta, Tived and Bokenäset farmers maintain meadows rich in herbs and other species and in Hulta a trek route has been developed in order to show a modern and historical view of the cultural landscape. In addition, farmers who have grazing animals in the landscape add a further quality. Many interviewees considered the possibility to see grazing animals to increase their wellbeing and that grazing animals should be a natural part of an agricultural landscape.

A farm as meeting place is a social function connected to the economic function of selling value-added food at the farm. That is, when consumers come to the farm to buy e.g. milk, they also meet and talk.

Further, farmers can offer their machinery and buildings for social activities, which is also connected to being a meeting place. One example from the cases is a farm in Hulta that offered land and machinery for the community to grow potatoes. The same farm also sold local handicraft gathered from a number of locals. A farm in Bokenäset had a small shed for selling their egg and potatoes. In the same shed, consumers and other locals had the opportunity to post ads and announcements on the wall. Other social activities farms can foster are markets and study visits.

Ecological functions

Agriculture creates a landscape mosaic that entails a number of ecological functions. First, modularity is created (Levin, 1999) which means that borders between landscape elements and landscape types form natural barriers, but also corridors, for the spread of species. Second, a heterogeneous landscape increases the possibility for many species to thrive, which in turn enhances biodiversity. Finally, depending on the production, crop sequence and the number of fields, different landscapes are shaped with different degrees of variation.

Viable populations of wild flora and fauna are a function that agriculture contributes to and that agriculture is dependent on for its production. Wild flora and fauna create ecosystem services vital for agriculture (Daily, 1997). Examples include natural enemies to pests and pollinators. Different farms contribute to a differing degree depending on modes of production.

The contribution to biodiversity looks different in the different study areas. In Tived, where the forest is the dominating ecosystem, each farm that is active is a contribution to biodiversity and the creation of ecosystem services. In Trönö, farm animals are decreasing at a high rate, which means that marginal areas are no longer grazed or mowed. This in turn decreases biodiversity and the amount of land in agriculture. In Hulta, one farmer and local inhabitants commonly manage a hay-meadow both manually and with machines. This social activity contributed to biodiversity.

Local ecological knowledge is knowledge about the local ecosystem and humans' adaptation to it. Local ecological knowledge can be built over generations but is dynamic and changing (Olsson & Folke, 2001). A farmer is highly knowledgeable of his/her animals and fields. This knowledge comes both from earlier generations and from farmers' own interaction with the agroecosystem. In the village action groups, this knowledge was mentioned as an important asset in the communities.

Economic functions

The production of food and energy creates incomes for farmers to differing degrees in the study areas, depending on whether the farm is full-time or part-time. All studied farms had some sort of production that was sold in some way, to middlemen or directly to end-consumers. Interestingly, while all village action groups mentioned production of food and energy as an important function for the rural areas in their future visions, no farmer mentioned production as part of their function for the rural area. Either, this was because production is so self-evident that farmers forgot to mention it, or because production is decoupled from the provisioning needs of local people so that farm production has no function to the rural area. However, all village action groups wished to increase the degree of self-sufficiency concerning food and energy. It was both seen as a quality and insurance to have food production and processing within the area.

Farmers selling directly to consumers normally obtain a better price. Farmers, especially in Bokenäset, used this fact where conditions for selling at the farm gate were good due to the closeness to larger towns and the high influx of tourists during summer. This enabled these farmers to make a living from the farm at the same time avoiding large investments or intensifying production. Egg, firewood, potatoes, beef and mutton were sold. Selling directly to consumers takes more work but is better paid, farmers said. For the consumers it increases availability of local foods with added value. The food carries identity for the rural area and is experienced as of a high quality because of this.

One farm in Bokenäset was so large that this allowed the farmer to employ local people on the farm. However, the other farms, too small for offering job opportunities on-farm, create jobs in the community and in the region by transports, processing and supply. Farmers maintain a big amount of local private and public roads. This creates an additional income for the farmer and is an important function for the rural population. Road maintenance is a precondition for the mobility of rural people and for tourist infrastructure.

Being land- and forest owners, farmers have access to risk capital for investments. This was particularly the case in Trönö, where six farmers, owning large areas of forest, cooperated and made investments benefiting the whole village (e.g. a forest machinery fair, a local sawmill).

Links between sustainable agriculture and rural development

Depending on production methods, interest of the farmer(s), and the production potential of the farmland, the number of functions can be expected to vary. However, all farms in the study, from large scale milk and meat producers to small-scale egg and potato farmers can be argued to create numerous social, ecological and economic services for the benefit of the local rural community. The sheer fact that these farms still existed in these areas created important ecological functions since, in Sweden, a farmed landscape carries a higher biodiversity than the forest (Bernes, 1994). Especially the organic farms in the study may have created many ecological functions (cf. Bengtsson et al., 2005). This would have been accentuated in cases where semi-natural grasslands were in use since some of the most species-rich biotopes in Sweden are semi-natural grasslands (Stenseke, 2006).

There is evidence elsewhere that sustainable agriculture can be linked to rural community development. A shift to farming practices that rely more on natural ecological processes, i.e. ecosystem services, than on external inputs will not only protect the environment, but will also benefit rural communities (Flora, 1990, 2001; Dobbs and Cole, 1992; Bird et al., 1995). To a large extent, ecological functions are created as farms use local resources and the local landscape for production rather than external inputs. Such farming types are normally considered more sustainable and also benefit the rural community (e.g. Pretty, 1998). Farms with sustainable production methods are also considered to better adapt to climate change (Wall and Smit, 2005).

Paid and unpaid functions

Most of the social functions are not paid and farmers create these functions while being active farmers and/or members of the community. Since most farms had a tight economic situation, social functions are endangered as soon as a farm closes down or experiences a too heavy workload. This situation of an increasing burden of voluntary work has been reported from other Swedish studies (cf. Lee et al., 2005). However, civic participation can benefit farmers by helping them to build social capital. Social capital is the set of resources inherent in interpersonal relationships and social organisation that can be used to enhance cooperation for mutual benefit (Putnam, 1995). It is only through social relationships, networks of social actors, that social capital can be mobilised and utilised (Lee et al., 2005). Thus, it contributes to the adaptive capacity of the community.

Supporting multifunctional farms

Multifunctional farms can strengthen the adaptive capacity of the rural areas in which they are situated, but these farms are also dependent on their local community (cf. Brodt et al., 2006). Village action groups want a number of services from local agriculture, such as an open landscape and food with local identity. Thus, in order to deliver these services, local farms need to be viable. As can be interpreted from the table above, the rural community can lose a large number of services delivered from agriculture if farms close down. Indeed, village action groups can act in order to strengthen local multifunctional farms. In the four areas explored in this paper, the village action groups supported, and proposed to support, local agriculture in a number of ways.

In Trönö, where farm animals are quickly disappearing from the landscape and many local people are interested in local food products, the village action group bought a small mobile dairy and put it in the largest village. In this way, small-scale milk producers can rent the dairy and process their milk into cheese, which they sell locally. The Trönö village action group also organises apple collection days where local apples are made into juice with a local brand. The current discussion concerned the issue whether the village action group should support the building of a cooperatively owned suckler cow shed. While buildings for grazing cows for meat production are expensive for each individual farmer, a common cow shed could decrease costs, increase efficiency and increase the grazed land in the valley.

In Bokenäset the village action group interviewed farmers asking about their needs and wishes in terms of local support. Among other things, the farmers wished better networking possibilities and study tours in order to explore new production potentials. Thus, the village action group planned breakfast meetings with farmers and other entrepreneurs in order to create meeting places for exchange of experiences and information. They also organised study tours and study seminars on topics such as alternative energy sources and processing of farm produces.

In Hulta, the village action group and local farmers were closely intertwined. Locals bought milk and hay for horses from the farmers. One farmer collected sewage and urine from 17 households in the

area to be used on the farmland, and hobby growers could collect manure from the farmer. Also, the farmer and locals managed a hay meadow rich in biodiversity together and organised a number of social events including market days and seminars.

In Tived the village action group organises two yearly market days where farmers can sell their products. They were also discussing the establishment of a regional sheep centre where interested farmers could obtain help, information and support in expanding their enterprise into sheep farming. The village action group took over the management of the old school building after it had been closed in order to offer an additional meeting place.

In all four areas the village action group wished to increase the amount of locally produced foods, acknowledging the many positive effects of a local food market (cf. Lyson et al., 1995; Feenstra, 1997). Village action groups considered local food to be an investment both in food security and in local identity. In the face of global changes food security is perceived to increase when production, processing and consumption is local. Also, the food carries local identity and thus added value for farmers and consumers. Local processing and marketing also creates meeting places for farmers and rural people, which in turn can boost creativity and new ideas for development. Further, local processing and marketing allows money to circulate more in the rural area so that local people and businesses benefit. Processing and marketing also permits farmers to retain a higher price for products. Thus, local processing and marketing can support multifunctional farms and rural areas in a number of ways.

Resilience analysis: the adaptive capacity of rural areas

Resilience of what to what

Based on the future visions the village action groups made during the workshop, the following accumulated desired system was identified: social cohesion; a locally active population; job opportunities and/or possibility to work from home; services and good infrastructure; an open landscape with active farms; and increased degree of self-sufficiency of food and energy. Thus, in the case of local agriculture, many functions for the rural area are relevant, the most prominent being production of food and energy and the creation of an aesthetic landscape. Therefore, in none of the four areas the social-ecological system can be considered resilient from the point of view of the village action group, without local agriculture.

Large global changes can be anticipated for the near future. These include increased energy prices (cf. Aleklett and Campbell, 2003) and climate change (IPCC, 2007). Other possible changes influencing rural areas are changes in rural and agricultural policies at the global and/or European Union level, and changes in people's values. These changes are external to the rural areas and rural communities and farmers can cope with these disturbances only by building resilience and adaptive capacity.

Fast and slow variables

For the areas in this study, slow variables that were identified were: population structure among farmers and other residents; changes in land use, which in turn changes the capacity of the land for agriculture; the steady decrease of number of active farms; changes in social capital such as service levels and number of local entrepreneurs; and changes in the number of local meeting places. Changes in slow variables influence the system in a way that might not be evident until fast changes occur.

Fast variables were also identified and are characterised by the fact that they are reversible to a higher extent than slow variables. Fast variables that were identified in the rural areas in this study were: changes in the capacity of farmers to market their products; changes in the number of visiting tourists; changes in local and national policies; the number of farmers with an off-farm income; and discontinuation of single local services and/or enterprises. If slow variables have changed for a long time without the community taking action or being aware of the changes, a fast variable can push the system over a threshold and into a new system (Walker and Salt, 2006). One example could be when there is only one active farm left in the village and a small change in this farm's economic situation changes so that this farmer has to leave the farm. In this case, the rural community can find itself without any farmer and the landscape changes radically, especially in densely forested areas. Even if the economic situation changes again and farming would be viable, a forest that used to be farmland

is not taken back into food production until there is so much money in agriculture that clearing of the forest is worthwhile.

Adaptive capacity of the rural areas

The four explored rural areas have some things in common, such as being less-favourable farming areas, having active village action groups, and being more or less forested. However, there are large differences as well, both concerning size, population, vicinity to population centres, and conditions of farming.

Tived is a large, sparsely populated area, where every farmer makes a great difference. In Tived, an individual farmer can be responsible for managing the landscape of whole settlements. Losing this farmer means a world of difference to the residents. Without farming in Tived, the forest takes over completely, making the area unattractive to live in. Further, since the inhabitants of Tived only own a small part of the land they have little say in the development of land management, which makes the rural community more vulnerable. The village action group is well aware of this vulnerability and works hard to build resilience through strengthening social networks and creating local meeting places. Examples include market days, attracting many people from other communities, and working hard to keep the local shop viable.

Bokenäset has a much larger population and is situated close to a number of middle-sized towns and a city. This, together with a spectacular seaside landscape, makes way for tourism and direct marketing of farm products. In turn, this implies a higher potential for adaptive capacity than in Tived. Since summer tourism is not directly dependent on farming, Bokenäset has the capacity to adapt to a situation where farming declines, at least in the short term. Further, since farmers are more numerous than in Tived, and since farmland is attractive, Bokenäset is not as dependent on individual farmers as Tived. On the other hand, there is less social networking between farmers and other inhabitants and many people on the peninsula do not have a strong identity as Bokenäset residents.

Trönö has a viable population of farmers and non-farmers, has a strong social cohesion, a number of local meeting places and a strong local identity. Together with the important resource base, the forest – largely owned by locals – Trönö can be argued to be a resilient community with adaptive capacity for changes. Trönö's resilience does not depend so much on agriculture as such, rather the structure of farms with large forest holdings. Farmers are landowners with large economic capital that can be invested locally. Most farming families have a strong social commitment in the local area and a tradition of cooperation. This history of cooperation and of forming associations has helped to re-form into new groups adjusted to the challenges of today. Thus, embeddedness in older social relations renders new social networks a more favourable position in order to contribute to development (Lee et al., 2005). The current trend, when animals largely disappear in agriculture to give way for cereal and/or grass production is an adaptation to present agricultural policies. However, if food production becomes profitable again, an adaptation to this is also possible as long as farmland is kept in production. In both cases the desirable open landscape is maintained.

Hulta also exhibits strong social cohesion and a tradition since the 1990s to work together with issues concerning nutrient cycling, land use and local food production. Since Hulta is a small area and thus has a small population, there is a smaller capacity for adaptation than if the area had been larger. For example, there are only two full-time farms in Hulta. One of these farms is crucial for rural community work in Hulta. It is not clear what will happen with the farm when the current farmer couple retires. Thus, a good part of the work the village action group does will be at stake unless someone else takes on this central role. At the same time, there are many non-farmers that are knowledgeable considering gardening and farming. Also, the village action group takes advantage of different competences among the residents, from catering to computer technologies.

All four rural areas in this study have active village action groups concerned with the overall development of their areas. Village action groups can be bridges between the residents, including farmers, and other levels of society such as the municipality, the county administration and other state agencies. Rural areas can be adaptive and resilient without multifunctional agriculture. However, all village action groups in this study expressed a desire for active local farms in order to create an attractive landscape and produce food with a local identity. Farms with many functions, in comparison with farms with few functions, increase the potential for adaptive capacity since one function can be lost without losing the other. Also, multifunctional farms have more local interactions, which builds trust, social networks and other synergies. Good networks are inclusive, facilitating learning, allowing sharing of success and generating wider social acceptance (Lee et al., 2005). Thus, if a farm creates many social, ecological and economic functions in the rural community, this fact increases the number

of possible development paths, in turn increasing adaptive capacity and in the end social-ecological resilience. In a world where changes are fast and erratic it is important to keep now redundant farmland used in case conditions change. Further, it is vital that local knowledge on agriculture is maintained (cf. Berkes et al., 2003).

Conclusion

Multifunctional farms support the local economy since these farms typically have many economic and social interactions locally. They are also more likely to sell their products locally, since they are more prone to be directed towards the local market rather than the national market. We argue that a farm with multiple functions has the potential to contribute to a higher degree of adaptive capacity in the rural community, both when it comes to meeting changes in the ecosystem and changes in the political-economic sphere (cf. Borron, 2006). The diversity of multifunctional farms, both in the sense of a high number of income sources and in the sense of bringing many other social, ecological and economic functions, partly create this adaptive capacity. At the moment the need for farms and rural areas with high adaptive capacity is great since climate change puts new and unknown demands on the agricultural and rural sectors. A farm with a diverse income base, with a large number of functions for the rural area, and many interactions with the surrounding landscape and people can be argued to be more flexible and adaptive than other farms. At the same time, these kinds of farms are rapidly disappearing in Sweden due to their unviable economic situations. Therefore, it is crucial that policymakers find ways to support multifunctional farms now while they are still in business, before knowledge is lost.

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