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Food and fuel – experiments on sustainable rural development alternatives at Finnish farms

1. Introduction

Finland's entry into the EU in 1995 had a major impact not only on domestic agriculture but also on the market forces and public institutional norms affecting rural livelihood. Since that there has been a decline in rural livelihood combined with considerable rural depopulation (Tykkyläinen 2005). Until now, forces such as the emergence of small rural enterprises have not sufficiently developed to counter this rural-urban migratory trend. However, local stakeholders have increasingly been encouraged to seek new alternatives of rural production and local livelihood (Kaljonen 2006).

Rural livelihood in small Northern countries such as Finland has traditionally been based on family farm practices. However, rural development is increasingly polarizing between the large-scale industrial agriculture and the more regional and multifunctional small-scale specializations (c.f. Rikkinen, 2005; Weltrowska 2002; Renting et al. 2009). The rapid transition of the Finnish agricultural system towards bigger farms has been driven by economics of scale and it is related both to Finland's EU membership and to the more general globalization of agricultural markets.

Simultaneously, the large scale farm production has been challenged with regard to its sustainability in general and to socio-economic sustainability in particular (Marsden et al. 1999; Ploeg et al. 2000; Marsden 2009). From the socio-economic point of view the topical question is what kind of agricultural enterprise would guarantee sustainable livelihood for farmers and their families.

Recently, the issue of renewable energy has been boosted due to the depletion of oil resources and risks related to climate change (Roberts 2004; Weart 2003). There are many alternative means to produce renewable energy. Yet, most of them have considerable impact on land-use and on allocation of natural resources. Particularly in rural areas the emerging ways of producing renewable energy imply changes in use of arable land, forestry and rural landscape. Therefore farms contributing to renewable energy production can hardly be considered as neutral suppliers with regard to their role affecting the sustainability of rural development.

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Referring to the traditional pluriactivity of Finnish farms (Vihinen et al. 2005; Goodman 2004; Andersson et al. 2009) performing in most cases both agriculture and forestry there seems to be a true choice for local alternatives even within the renewable energy production branch including the various options in choice of energy sources like bio, solar, wind and hydro and the different production technologies within each of them. Here we concentrate on alternatives in bioenergy production. The individual farms may contribute to bioenergy production by delivering various biomass based fuels or by directly producing energy in forms of heat and electricity. If biomass is produced on fields otherwise used for food production, then obviously priority has to be taken between food and fuel by constant parcels (see e.g. Sustainable Production of Bioenergy from Agriculture and Forestry in the Nordic Countries 2009).

On the other hand producing food is the very traditional means of exploiting local natural resources at Finnish farms. Meanwhile agriculture as farmers' productive practice is in the global scale the most prevalent and possessed means to utilize local natural resources, it is, nevertheless, also a practice involving considerable risks to the environment (e.g. Mol & Bulkeley 2002). During recent decades these risks have been taken into consideration increasingly and as a consequence agricultural policies have been gradually intertwined with environmental policies (Stobbelaar et al. 2009). As to the on-farm business this means that agricultural practices need to be adjusted to contemporary set of norms with view to enhance sustainability of the agricultural production. For example in EU this line of development is even stimulated by particular public benefits allowed to farmers to protect environment (e.g. Kaljonen 2008; Burton et al. 2008).

Obviously, also renewable energy production at farms has local environmental impacts depending on the way the energy is produced. In energy crop cultivation, the environmental effects are comparable to those of food production, in wood based energy they are very different and in waste material utilisation, like in biogas production they can even be regarded as predominantly positive (see e.g. Parris 2004). Consequently, there is no simple equation as to compare the environmental friendliness of the two branches of rural production, namely food and fuel. Considering the pluriactive character of most Finnish farms one may argue, for example, that it is more reasonable to compare the environmental impacts of biomass based energy production utilizing wood raw material to those of other forms of energy production rather than to the environmental impacts of food production. Moreover, regions and nations simply lack - historically speaking - the long-term experience of modern small scale renewable energy production. Thus, from the sustainability perspective it has been difficult to establish stable public recommendations with view to food and fuel alternatives. Therefore decision making at farms concerning these product alternatives is performed - up until now - mostly on highly individual level considering the present assets available and the specific on-farm circumstances.

Thus, in order to estimate the more immediate societal merits and local impacts of food and fuel production it is important to consider all the main aspects of sustainability, namely ecological, economic and social aspects. From the on farm activities' view point

(e.g. commitment, investment, generational shift) the socio-economic yield of each activity seems to be decisive in that it either does or does not bring livelihood to farmers and their families (see also Vihinen et al. 2005, 17). Since farm tradition in Finland is based on both family based land ownership and its sequence in the family, one may consider farmers as being key actors of rural sustainability at their respective communities, since they make the decision about the land use. Therefore it is interesting to investigate what relevant alternatives there are to secure farm livelihood locally. A general target given to local actors is often phrased in terms of choosing the potentially “best practice” with view to sustainable rural development. However, at farm level food and fuel choices may involve quite complex issues implying not only alternativeness but also potentially profitable combinations.

This paper discusses some current alternatives of farm specialisation from the perspective of multifunctionality, pluriactivity and rural sustainability. The main aim is to build a new research framework in order to consider in depth the social circumstances of taking decision concerning alternatives of production line at the farm level. At the background we have an empirical case study focused on Central Finland performed by the authors examining, in particular, the local/regional context of farm activities².

2. Alternative farm productions

During recent decades major adjustments have taken place in Finland towards upscaling of agricultural production by means of increasing the size of individual farms and adopting new technology. From the socio-economic perspective this has implied not only difficulties for smaller scale farmers in keeping up their performance at the competitive market but also to a considerable decrease in the overall number of economically active population in farm activities (Tykkyläinen 2005; Vihinen et al. 2005). As a consequence, many of the farmers in less advantageous position have aspired to find new lines of production that might secure the continuation of their farm activities, even if thousands of small farms have simultaneously been closed and deserted through rapid rural-urban migration (c.f. Bjørghaug & Richards 2008).

As a result of this double transition many of the remaining farmers tend to perceive their small scale productions something like alternative to the main stream production regardless of their specific product line (Järvelä et al. 2009; see also Parrot, Wilson and Murdoch 2002). Therefore we tend to associate new rural productivism in Finland with small scale production. By new productivism we refer to agricultural policies beyond

² The case study is founded on qualitative research strategy inspired by critical ethnography. The main empirical data includes parallel sets of interviews with producers of local food and of renewable energy. The data has been collected within the framework of the SUSMARU- project funded by the Academy of Finland in 2007-2009. Empirical results of the case study have been published e.g. in Järvelä et al. 2009; Jokinen et al 2008.

traditional productivism and post-productivism (Wilson 2001; Mardsen et al. 2002) seeking to ameliorate the viability of rural industries – agriculture in particular - to meet new targets of rural development related to multifunctional production (c.f. Bjørkhaug, & Richards 2008) and promoting local services including environmental services shaping landscapes in sustainable manner. Thus, implementing new productivism at the Finnish farm level framework could consist of either small scale quality food production (such as local food or organic food), new commodities based on wood material (e.g. houseware and furniture), or of on-farm renewable energy production. Within this framework farms could even go beyond material commodity production by delivering environmental restoration services or services for tourists, thus, searching for new forms of pluriactivity.

Considering food and fuel production in particular, the alternativeness in food production seems to be conceived as small scale (Murdoch 2000; c.f. Watts et al. 2005), whereas for fuel production this is less evident. In fuel production a parallel to small scale seems presently to be mostly a matter of even finding a relevant framework for comparison (Peltola 2007). Namely, fuel production may be performed e.g. as an additional source of income to the main branch of economic activity regardless of the scale of the farm. On the other hand the on-farm fuel production in Finland may always be considered small scale, if compared to the main stream power generating which is increasingly based mainly on large scale productions, including nuclear power plants.

A second aspect of interest here is the local service principle involved in the new alternative product lines at farms (e.g. Murdoch et al. 2000). In food production this is seen especially clearly in the emergent experimenting on local food concept, however, still in search for a more vibrant profile in Finland (Jokinen et al 2009). Anyhow, local food production is meant for local customers to be specified who may be supplied either individually (through regular retail or direct sales) or collectively (through public procurement or private businesses such as restaurants). In any case much of this activity is integrated through multiple links to the overall regional food system (e.g. Higgins et al. 2008).

However, for the on-farm fuel production the general idea of local service principle seems to function otherwise and more directly (see Elliott 2000). In fact one of the purposes of generating fuel at farms is to secure energy supply at individual farms following the energy self-sufficiency target. Indeed wood for fuel practices make an important tradition in Finland even if there has been a serious break in this tradition over the late 20th century. Recently, however, an important sign of the more market orientated rural fuel production can be seen in establishment of local arrangements where farms e.g. sell part of their wood fuel energy to local customers that may be individual private businesses or households or else public institutions (schools, hospitals etc.) (c.f. van Vliet 2003). Hence, overall we claim that there are small scale on-farm businesses in both food and fuel production in Finland that both carry a sense of alternativeness and aspire to function on a local service principle even if patterns of production and distribution may diverge considerably.

In assessing the future of alternative food and fuel production at Finnish farms it is important to consider not only the structural socio-economic circumstances for such businesses, but also to focus on the social mobilisation aspect of these farm activities including the relevant socio-cultural transition that may be involved in these trends of new productivism (Hinrichs 2003; Watts et al 2005). In a country such as Finland where most of the country-side is sparsely populated and where cultural tradition in agriculture still leans on the ideas of success and independency of individual family farms, the target of meeting local service needs and functional product distribution may still be a great challenge not only to the individual farmer but also to other actors of the supply chain (Järvelä et al. 2009; c.f. Cruickshank 2009).

This is particularly true with view to the increasing globalisation of agricultural supply chains having major impact on the restructuring of the food systems world-wide (Watts et al. 2005; Lowe & Phillipson 2008). In this respect Finland can hardly make an exception. Similarly, energy supply systems tend to globalise as well even if there are many regional particularities in this tendency e.g. according to the main source of energy. In any case the manner of organising the channels of product distribution so as to secure the unhampered access to markets is most relevant to the small producers, since they may turn out to be quite vulnerable when trying to make the market individually.

As to the environmental aspect of these emerging alternative productions at farm, farmers in Finland seldom express strong priority of ecological sustainability over sustainable livelihood targets. However, in case of the win-win situation where principles of multifunctionality can be implemented in order to promote both ecological and eco-social sustainability there seems to be an emerging tendency that appears quite favourable towards making decisions supportive to strengthening environmental stewardship at farms. Nevertheless, a clear need for more effective public policy remains to support the specific initiatives of multifunctional production concerning both small scale food and fuel productions.

3. Food and fuel – making good use of local natural resources

A remarkable part of the traditional rural entrepreneurship seems to have vanished in Finland because the improved technological means and skills have led to specialization and increase of efficiency in farm production (Vihinen et al. 2005). However, there is some continuity. The Finnish farms remain basically pluriactive as forestry still is a central farm activity and most of the farms are carrying on both agriculture and forestry. From this starting point Finland stands out as a particular case in defining choices of alternative product lines at farms (c.f. van der Ploeg et al. 2009). As briefly mentioned above renewable energy production may be highly interesting to Finnish farms since

there are potentially both traditional and less traditional alternatives to perform successfully in this production branch.

On the other hand extensive development of energy line production at farms may be challenged from the point of view of the eventual vulnerabilities and resource scarcity of local food production ensuing from in field energy production in particular. Indeed, even urban customers interest to local food and other alternative food productions (such as organic food) has recently been on the rise (Morris & Buller 2003, Winter 2003) leading in this respect to an intricate choice of land use concerning in particular the existent agricultural fields. In Finland, however, the basic setting for choices of product line is often even more complicated than this since the pluriactive farmer may also consider turning part of the agricultural fields into forest or else to clear forest to extend fields.

In this chapter we will briefly introduce some of the main regional circumstances that frame the current choices for farmers in Finland while they set out for taking decision on product line concerning relevant choices within alternative food and fuel production. This is done with view to sustainable and efficient use of local natural resources, to securing sustainable farm livelihood and to contribution to local/regional service principle, since we consider all of these both relevant and legitimate norms for present on-farm businesses. Secondly, we will make some remarks specifically concerning food and fuel production at Finnish farm. And finally we will introduce in general terms our conclusion about the present situation where decisions concerning the product line have to be made.

Overall membership in EU has greatly restructured the framework of decision making for individual farmers as concerns choice of product line, investment and land use. Not only have the tray for available financial and other support (eg. Research and development) been changed but also the norms set on production processes, facilities and products themselves have been modified. Moreover, decision making at farms is complicated by the double standard for benefits allowance combining both national and supranational frameworks that are put in place simultaneously. Since small producers indeed need these support systems in order to secure livelihood, they hardly complain about the support systems as such, but rather about short term changes, the overwhelming paper work involved and the eventual biases of support quotas as they perceive it (Kaljonen 2006; c.f. Gorton et al. 2008).

The EU, however, has not only power to regulate the immediate financial circumstances of agriculture, but also brings in more ideological policies that may direct choices of farmers and set forth new expectations for restructuring and re-allocating productive assets. From this perspective especially the idea of multifunctionality of agriculture (van der Ploeg et al. 2000; Renting et al. 2009) has been an interesting challenge to the small producers striving for alternative production such as renewable energy or local food.

The concept multifunctionality has its roots in a social welfare justification for state assistance dating from the earliest years of the Common Agricultural Policy (Potter & Tilzey 2005). Yet, Wilson (2008) suggests that high environmental sustainability is a central factor in the strongly multifunctional systems. Thus, as policy concept

multifunctionality suggests that food production and environmental protection can be combined (see Garzon 2005). Moreover, it refers to the idea of searching rural livelihood assets beyond the traditional food production including important focus on non-food products (Pretty 2002; also McCarthy 2005). This in particular makes the concept applicable in analysing food and fuel product choice considerations.

However, from the everyday activity point of view of Finnish farmers multifunctionality probably stands out as an upper level abstraction, whereas pluriactivity (Kinsella et al 2000) of the farm is a simpler and efficiently narrative conception that might better capture the decision making situation at the grass roots. This seems to be evident since farmers are used over time to weigh how to allocate their assets between agricultural crops and forestry for example. For the fuel or food choice the peculiar question is whether the individual farmers should carry on both food and fuel production or to specialise in one of the two. To be more exact one may even reformulate the choice into a food, feed or fuel choice which displays a more accurate problem setting at least in most part of the Finnish agriculture where particularly dairy production has been an important tradition not only by socio-economic standards but even from the point of view of socio-cultural rural development (Vihinen et al. 2005).

Nevertheless – in order to put it briefly - we only address here the food and fuel choice as a highlight of taking decision at Finnish farms. In general, making a product line choice for food production, and particularly for local food, has several advantages for small scale family farm. As mentioned above supplying food is an unbroken tradition of farm activity in most farms even if rotation in food products may have been frequent. This means that the potential yields are more conceivable and often even more predictable than in entering an entirely new business line such as renewable energy production at a distributed supply basis. Especially, from the perspective of sustainable livelihood food production - at small farms especially local food production - may be considered more rewarding since the food system from field to the market is basically known to the farmers and therefore realistic estimation of the eventual success can be made more easily than on product lines of the more genuine pioneering kind. Moreover, food production can be considered quite easily from the pluriactivity perspective to guarantee at least basic income for the family. Furthermore, however, depending on the level of technology, product variety and labour resources supplied by the family multiple other sources of income may be added to the food production in flexible ways. All these advantages may even contribute decisively to the generational shift which is often difficult to carry out due to the generally challenging prospects of small production units and the consequent heavy rural-urban mobility (Silvasti 2001).

However, small alternative food productions may also appear quite vulnerable as to their capacity of yielding sustainable livelihood to farmers and their families. Therefore it is clear that non-food alternatives are worth to consider. In Finland, renewable energy and especially bioenergy production is clearly one relevant alternative. From sustainable livelihood perspective at farms there are generally speaking two main alternatives to develop professional activity in the energy branch, namely direct energy production in forms of heat or electricity, or fuel / biomass production for fuel raw material. Presently,

many of the farms carrying on energy production operate this branch on the auxiliary basis mainly to earn additional income. Nevertheless, it is possible that in near future there will be more farms establishing their main activity within the energy branch.

4. Conclusion

Agriculture in Finland has gone through an important restructuring over the past decade. Many of the traditional opportunities for farmers have been diminished or even closed. On the other hand some new opportunities seem to have emerged within the framework of multifunctional entrepreneurship. Food and fuel productions are often seen as alternatives, but they can also be perceived as complementary options from the individual farmer's perspective. However, there are still many challenges in reorganizing local communities and regional networks in order to establish stable markets, effective production/consumption chains and public policies to support these emerging productions.

With reference to the advantages concerning traditional field cultivation the alternative to convert (food) fields to energy crop may seem presently tempting for farmers. However, from the point of view of alternative production based on local service principle and local sustainable development one may ask what, in fact, is the benefit of this e.g. as compared to local food production. Namely, the more refining alternatives with actual production of heat, electricity or fuels seem provide more in terms of local sustainability. Then the main alternatives would be the more established heat entrepreneurship, referring to mostly co-operative wood utilization for heat production and selling for customers, and the more recent farm-based biomass utilization for heat and electricity production via biogas or biodiesel production. By choosing this kind of energy production the agricultural fields could still be used for food production, thus, securing not only the immediate domestic food supply but also skills, knowledge and other socio-cultural assets necessary for food production.

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