Entrepreneurship in biodiversity conservation and regional development

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This paper discusses the protection of biodiversity by means of market-based activities in the food sector and the preconditions and context that provide fertile ground. The variables investigated are the regional production factors involved, the entrepreneurship demonstrated, the kind of niche market developed, and the various kinds of support provided. A case study of a Swiss market activity designed to restore and protect biodiversity is presented; it concerns the cultivation of a traditionally grown wheat species combined with measures to protect wildlife and flora. The wheat is processed into a variety of products, which are sold within the region. The organization of the activity, its economic development and its ecological implications are presented. The discussion reveals the particularities of such endeavours that are of relevance to the economics of regional development (e.g. limited product and market development, reliance on subsidies, need for broad coalitions) and factors of success (e.g. networking, involvement of research, political support). Conclusions with regard to policy are as follows: (1) support in the very early stages is needed (e.g. start-up capital, capacity building, partner-like support from administration); (2) biodiversity-sound agricultural activities rely on subsidies; and (3) a propitious framework for such market activities is to be conserved.

Keywords: biodiversity conservation; genetic resources; habitat restoration; low-input farming; niche market; regional economic development.

1. Introduction

One important, albeit rarely encountered means of protecting biodiversity is the introduction of market activities that generate biodiversity protection, either as a by-product or as the main objective of the activity. Explanations for the lack of such economic activities include adverse economic incentives, the absence of markets, and absent or unfavourable processing, retailing and marketing structures, all of which lead to a lack of profitability.

Indeed, examples of the protection of biodiversity through economic activities to be found in the literature are limited to those that occur within the framework of particular conservation efforts (e.g. biosphere reserves and national parks) and to examples of organic production that have some beneficial effects on biodiversity. The limited occurrence of such activities is surprising, given the number of recommendations calling for links between economic activities and biodiversity protection, which are thought to generate win-win situations (Walker 1999), and for economic incentives to encourage the protection of nature (Organisation for Economic...
Cooperation and Development [OECD] 1996). Yet, despite recommendations and general statements about establishing a conducive framework (Perrings et al. 1995), discussions devoted to economic and regional development have not considered which preconditions and which context would provide fertile ground for economic activities designed to protect biodiversity.

In this paper, a link between regional economic development and biodiversity protection is established, and an example of an entrepreneurial initiative that resulted in a new market activity focusing on biodiversity protection is presented. It is hypothesized that an economic activity that protects local biodiversity can be successful in economic, ecological and social terms if it builds upon regional production factors and entrepreneurship, occupies a niche market and receives regional support.

The above hypothesis is verified by a case study of a Swiss project in which entrepreneurial endeavour and conservationist activities go hand in hand. In the project concerned, local farmers were encouraged to cultivate the traditionally grown wheat species emmer (Triticum dicoccum) in a low-input regime. Besides production by the farmers, activities were set up by the project managers that also involved the management of ecological compensation areas and the production and regional distribution of a variety of goods made from the traditional wheat species.

The first part of this paper consists of a discussion of regional development theorizing and biodiversity conservation and an introduction to the variables that will be verified by the case study (Section 2). This is followed by an analysis of the project, focusing on development, prospects and results (Section 3), and a discussion of the variables of investigation (Section 4). Finally, conclusions are drawn regarding regional and agricultural policies (Section 5).

2. Regional development theorizing and biodiversity conservation

In the last two decades of the 20th century, regional development theorizing underwent a change that resulted in the discovery of local and regional resources and the claim that these resources represented a crucial ingredient in locally based economic and social development (D’Arcy and Guissani 1996, Thierstein and Walser 1997, Maillat 1998). This new focus facilitated the linking of regional development and environmental conservation, a process that drew the attention of politicians, researchers and the public in the early 1990s (Gibbs 1996, Ekins and Newby 1998). Additionally, local and regional levels had been identified as important starting points for environmental policy (e.g. Agenda 21). Since then, environmental resources have been considered to be an asset in regional development in that they are an input to economic production and a ‘soft’ production factor attracting economic activities.

However, the availability of local and regional resources and the presence of environmental awareness are not sufficient to induce economic development, in particular if this development simultaneously aims at protecting and enhancing biodiversity. The specific challenges of biodiversity protection within an economic activity are as follows: (1) most measures to protect biodiversity do not provide tangible additional value to the product (e.g. healthier or more attractive products) and the ecological benefits cannot be communicated with labels, as such labels do not exist (organic labels promote biodiversity protection only partially); (2) the protection of biodiversity...
sity is, in general, labour- and cost-intensive and hence necessitates high product prices and/or particular financial support; (3) practical experience with biodiversity protection in agriculture is in its early days, as from the 1950s to the 1980s agricultural practice did not pay attention to biodiversity. Thus, much new knowledge is needed to establish biodiversity-sound production methods, including processing, in addition to which consumers sometimes have to be provided with information about the product (e.g. how to consume, cook, conserve, etc., an uncommon species).

Against this background, our hypothesis claims that an economic activity that protects local biodiversity can be successful in economic, ecological and social terms if it builds on regional production factors and entrepreneurship, occupies a niche market and receives regional support. The following categories of variables, namely regional production factors, entrepreneurship, niche markets, and regional support, will therefore be discussed and verified in the case study.

2.1 Regional production factors

Regional development theorizing of the 1980s proposed the model of generative growth (Mailat 1998). In this model, regions are considered to be able to provide and create resources – including local knowledge and capacities for production and processing – as they are able to draw upon regional characteristics such as proximity, common values, identification, local experience and networking. Hence, regions become able to generate growth and development. It has been admitted, however, that a development model of this kind needs to be stimulated by suitable policies.

In the analysis of the case study, attention will be focused in particular on three variables belonging to this category: (1) the role of local resources; (2) the existence of local knowledge; and (3) the existence of production and processing capacities.

2.2 Entrepreneurship

Entrepreneurship is, following Schumpeter (1993/1911: 103ff) and many he inspired, the precondition for economic development. Economic development is considered to be based on exceptional changes in the sense of new combinations of the existing production factors of an economy. These new combinations are created by entrepreneurs, people who either do something different or do something in a different way, often under adverse or uncertain conditions.

In the context of our study, we will investigate the following variables: (1) new combination of resources, including production and processing capacities, support and knowledge; and (2) entrepreneurs and their activities.

2.3 Niche market

The creation of niche markets via product differentiation is regarded by von Mises (1961) as one of the most important means of competition and, thereby, of economic development. This view is also apparent in the works of Schumpeter (1954). Niche markets protect against competition and give their incumbents higher than normal profits. Hence, they can be important to emerging markets and their development
Niche markets can be created by either product differentiation (vertical differentiation) or market segmentation (horizontal differentiation) (Pepall 1992, OECD 1995a). In reality, consumer preferences often combine horizontal and vertical differentiation. This combination is also the most interesting to firms, as it generally provides high protection and higher than normal profits (Pepall 1992).

Niche market development is highly recommended as part of overall rural development (OECD 1995a, b, Brester 1999, Ilbery and Kneafsey 1999) in order to trigger benefits that accrue to local business, to foster economic restructuring, job creation, wealth transfer to rural areas, and to improve social cohesion and communication. Indeed, rural niche markets can start from a modest availability of production factors, and can be supportive in linking economic, social and conservation activities at the regional level. However, as Chassagne (1995) points out, an enterprising approach is essential for success in developing a niche market. This comprises the ability to link entrepreneurs in partnership, to cultivate the relationship between producers and consumers, to innovate and to market the innovations successfully. The variables to be investigated are (1) the niche market strategy (market segmentation or product differentiation), and (2) the entrepreneurial qualities needed to advance the niche market.

2.4 Regional support

The model of generative growth includes regional support as a precondition for successful economic development. Entrepreneurship and niche market development may also depend on support, particularly in the context of the activity this paper focuses on. Indeed, the involvement, and hence the support, of the people concerned to conserve biodiversity is essential for success. The reasons for this are threefold: first, the prevailing biodiversity is often largely a result of human activity and is maintained by humans. Second, the linking of economic and conservationist activities also touches the field of politics (mainly conservation and agricultural politics) and the activities of environmental groups. Finally, the market activity is so different from the usual market activity that regional identification with the product and a high demand for it are crucial to ensure success in the market. Therefore, the following kinds of support will be looked at: support (1) by policies, (2) by the public through identification with the product and through consumer demand and purchasing power, (3) by institutions (NGOs, associations), and (4) by financial means.

In the case study that follows, we present a successful niche-market project designed to conserve biodiversity. We will analyse this project according to the categories and variables listed above.

3. Case study: biodiversity conservation through a regional economic activity

3.1 Methodology

A case-study approach was chosen to test our hypotheses. Case studies have been identified as a valid and useful subject of research when formulating and verifying
categories, hypothesis and theories (Glaser and Strauss 1967, Yin 1984, Eisenhardt 1989). They are the ‘preferred strategy when “how” or “why” questions are being posed, ... when the focus is on a contemporary phenomenon within some real-life context’ (Yin 1984: 1). The methods of enquiry we used included the analysis of annual project reports, a standardized questionnaire to all farmers, processors and retailers, telephone and face-to-face interviews with farmers, processors and retailers and with representatives of the organizations involved, and an analysis of the relevant documents, media reports and literature. Our final procedure is close to that proposed by Eisenhardt (1989).²

3.2 Basics of the case study³

In the mid 1990s, the Swiss Ornithological Institute (Sempach) introduced a low-intensity crop-production programme in the Klettgau valley (northern Switzerland) to protect endangered plant and bird species found on the open farmland there and to reintroduce the grey partridge (Perdix perdix). This long-term programme focuses on conservation and habitat management. The farmers participating in the programme, who are located in an area of about 60 km², grow the traditional wheat species emmer (Triticum dicoccum) and follow specific ecological management schemes, such as the renunciation of the use of pesticides. The emmer is processed within the region into a variety of products, such as bread, spaghetti, and beer. These products are sold within the region, and some are sold in the neighbouring regions.

The Swiss agro-political context is as follows: Switzerland grants very high agricultural subsidies, the highest world-wide (Swiss Federal Statistical Office 2001). However, due to obligations under the WTO agreements, the subsidies have to be drastically reduced. As environmental awareness among the public is generally high and there is strong support for Swiss farmers, agricultural policy increasingly tries to redirect previous subsidies designed to support agricultural prices to subsidies supporting ecologically benign production methods (for more on this dimension of Swiss agricultural policy, see OECD 1997).

In the following section, we briefly explain the ecological motivation for and economic goals of this conservation project. We then describe the organization and financing of the project and analyse its development and its success.

3.2.1 Ecological motivation and goals: The overall objectives of the project are the conservation and establishment of appropriate habitats for animals and plants. A further aim is to achieve a high number and diversity of invertebrates as an essential food source for birds breeding on the open farmland. Indeed, the decimation of invertebrates due to highly intensive agriculture, in particular the use of pesticides, has been the major reason for the decline of the grey partridge (Jenny 2000a).

The aim of cultivating emmer is to conserve species diversity and its genetic base (especially of endangered complementary field flora and fauna) by

1. establishing ecological compensation areas (e.g. set-aside, wild flower strips) on at least 5% of the extensively cultivated area at the edges of fields,
2. banning the use of pesticides,
3. improving crop rotation, and
4. creating ecological corridors.
3.2.2 Economic motivation and goals: Economically, the project aims to recover as much as possible of the additional cost involved in low-intensity production from the market through the regional manufacture and marketing of competitive, ecological and high-quality products made from emmer. Farmers who participate in the scheme and thereby create ecological value are to be compensated for their additional efforts and for the lower productivity of emmer.

3.2.3 Project organization and activities of the project management: The project is the result of a broad institutional involvement of the Swiss Ornithological Institute, Sempach, the Swiss Centre for Agricultural Extension, Lindau, the regional group of the WWF, and Pro Specie Rara, a regionally-active NGO engaged in conserving genetic resources in the form of traditionally used species and varieties. The regional government assisted in planning the ecological set-aside areas with the close collaboration of the regional farmers.

Before the cultivation of emmer started, the project organizers, who either come from the region or have close links with it, had various preparatory tasks to complete (e.g. completing pilot studies on ideal growing conditions of emmer, setting up a regional production and distribution network, organizing a price guarantee for the farmers). The development and growth of the project suggest that organizational tasks will continue to arise. Figure 1 illustrates the organizational structure of the project.

3.3 Project development and discussion

In the following subsection, the development of the project in economic, ecological and social terms will be presented and discussed.

3.3.1 Economic development and success

3.3.1.1 Participating farms and economic implications for them: The total number of farms participating in the project has increased from 11 in 1996 to 39 in 2001. In the same period, the overall area cultivated with emmer has increased from 8.1 ha to

Source: adapted from Schelske (2000).

Figure 1. Project organization.
80.5 ha (this includes 2.6 ha of einkorn, a related traditional wheat species, the cultivation and processing of which may be developed in the near future) (figure 2). On an annual basis, this reflects a 28.8% growth in the number of participating farms per year and a 58.4% growth in area per year. The lower growth in participating farms when compared with the growth in the total area is due to the fact that farmers tend to increase their cultivated area significantly after the first year of participation. This is also reflected in the development of the average area cultivated with emmer: it increased from 0.73 ha/farm in 1996 to 2.07 ha/farm in 2001.4

In line with the increases in the number of participating farms and the cultivated area, the total quantity of emmer harvested increased from 22.3 tons in 1996 to 94.1 tons in 2000, representing an annual growth of 43.3%. The average harvest per ha is 2.42 to 2.77 tons. The farmers’ total turnover from emmer production from 1996–2000 was CHF 427 700. The share of emmer turnover per farm ranged from 1.3 to 5.5% of total farm turnover in 1999.

From a financial point of view, cultivating emmer is an attractive proposition for farmers. The contribution margin (includes all costs and returns)5 of emmer is about 20% higher than that of winter wheat, which is the only attractive substitute from a financial point of view in this region. One reason for the high contribution margin of emmer is the existence of two federal subsidies that compensate ecological measures. These subsidies are not granted for conventional wheat production.6 Overall, subsidies account for about one-third of the contribution margin of emmer. Another factor that increases the contribution margin and secures the farmers’ income is the fixed and guaranteed price that the miller pays the farmers for emmer. These financial incentives explain why the number of participating farmers and the area under cultivation have both experienced such impressive growth.

3.3.1.2 Processing of the traditional wheat and turnover: Since the start of the project in 1996, various products made from emmer, such as bread, pasta, confectionery and beer, have been developed by the project organizers on the one hand and by
regional processors on the other hand. These products have been sold regionally and consumed in regional restaurants. Table 1 shows the various processors and their activities.

The overall turnover of the project amounted to about CHF 608 000 in 1999. The shares of the various contributors are displayed in figure 3. The share of restaurants/beverages amounted to CHF 289 000, of which beverages contributed the greater part. The turnover of the farmers and seed producers amounted to CHF 127 000, that of the millers to CHF 109 000, that of the bakeries to CHF 79 000, and finally, the turnover of the retail stores and the chef amounted to CHF 4000. The turnover of the retail stores started to increase considerably in late 2000, when a national retail store chain started to produce and sell emmer bread in one canton. The growth in turnover in 2000 was about 19%. If the national retail store chain extends its distribution within Switzerland as planned, the overall turnover will increase even more.

Four years after the project began, it acquired a new partner in another region. In 1999, six farmers in the Fricktal (a valley in a neighbouring canton) started producing...
organic emmer for an agricultural co-operative and wholesaler of organic products following the same ecological regulations (yet fully organic). This wholesaler had a turnover of CHF 25 000 from emmer in 2000. The number of farmers increased to 13 in 2001, and the wholesaler expects a growth in turnover of 20% in 2001.

As regards product development and promotion, the small processors and retailers are almost inactive. On average, the processors’ and retailers’ share of the costs incurred for product promotion is between 0 and 3% of the turnover on emmer products. Only two bakeries spent 4–10% in the first year, but dropped to 0 to 3% afterwards. However, the national mill involved and the organic wholesaler (partner project) claim shares of 11–50% for the first year and 4–10% thereafter. Owing to the inactivity of the small entrepreneurs, the project management takes over all promotion. It is assumed that the small entrepreneurs bank on the starting success and the consumers’ initial interest but neglect to ensure the success of the product in the medium term.

In their analysis of regional product organizations, Hofer and Stalder (2000) identify three types of economic potential in regional economic projects: (1) business-related yield; (2) creation or maintenance of value-added, employment opportunities and thereby income within the region; and (3) efficient allocation of resources. With regard to this case study, business-related yield, value-added and income within the region have clearly been created. New employment opportunities did not arise despite the more labour-intensive production method, and whether resources are more efficiently allocated is difficult to demonstrate without further research; it is, however, likely.

3.3.1.3 Cost of the project management: The cost of managing the project was CHF 281 550 (1996 to 1999). This includes wages, small investments, office space and materials. A part of the cost is covered by a large donation from the Swiss Funds for Landscape (largely funded by public money) and a smaller one from the Swiss Governmental Agency for the Environment, Forest and Landscape (SAEFL) (in total: CHF 80 000). Additional revenue comes from licence fees paid by the farmers and processors (CHF 52 000) for the services provided by the project management (e.g. contracting with the millers, marketing). The remaining costs (CHF 150 000) are covered by the founding institutions. From 2000 on, the licence fees paid cover the costs incurred in managing the project.

3.3.1.4 Conclusion as regards the economic success: The start of the project, which involved 11 farmers cultivating emmer on 8.1 ha of land, was modest. Although the growth of the project has been important, the project remains a minor economic factor in the region. Starting with more farmers and achieving a higher growth rate would not have been possible in view of the initial uncertainties, such as the absence of markets and the limited knowledge of emmer cultivation and processing. This situation is typical of new agricultural niche markets but does not forcibly hamper market success in the long term. For instance, organic farming and processing also started modestly (although with a broader base) and had similar growth rates over the last two decades, but it has definitely become a market force in the meantime.

A precondition for the economic success is the sizeable share of the contribution margin represented by subsidies. This shows that emmer cultivation – like any low-input and conventional grain production – would not be possible without subsidies.
Hence, ecologically sound practice depends on subsidies, even in the case of projects that obtain high value-added in processing and retailing and have a protected (niche) market.

In spite of the modest size of the project and its low impact on the regional economy, emmer cultivation represents up to 5.5% of the turnover of the farms involved. Hence, it adds to agricultural pluriactivity, which is becoming increasingly important in ensuring farmers’ incomes (Carter 1998: 18). Furthermore, although the size of the project is modest, the overall turnover of CHF 608,000 in 1999 is remarkable.

3.3.2 Ecological development and success: Ecologically motivated regional projects such as the one described here have, by their very nature, beneficial ecological effects. Hofer and Stalder (2000) consider the beneficial ecological potential of such regional projects to be: the conservation of biodiversity and the avoidance of monostuctures; a reduction in emissions (into water, soil, air, fauna and flora); the avoidance of exported ecological risks; an improvement in environmental responsibility; and a reduction in energy consumption.

As the case study focuses strongly on the conservation of biodiversity and the avoidance of monostuctures, we will examine this aim first. To be eligible to participate in this project, farmers must first establish ecological compensation areas. In 1999, the actual area set aside amounted to 12% of the area cultivated with emmer, and thereby greatly exceeded the required 5%. Accompanying research by the Swiss Ornithological Institute, Sempach, and the Geobotanical Institute of the ETH, Zürich, has shown that these compensation areas favour endangered birds of the region, such as the skylark (Alauda arvensis), the corn bunting (Miliaria calandra) or the common quail (Coturnix coturnix), which breed in the fields or nearby (Weibel et al. 2001, Jenny et al. 2002). They also provide habitats for a huge number of plants and insects, even endangered species (Schaffner and Keller 1998, Ullrich and Edwards 1999, Ullrich 2001; favourable effects of set-aside in the UK have also been reported by Sotherton 1998). Concerning the grey partridge (Perdix perdix), observations show that this species breeds and forages preferably both in wild-flower strips and in the emmer fields (Jenny 2000a). The resettlement of the grey partridge has not been successful to date, however (BUWAL 2002: 62). The reasons for this seem to be adverse climatic conditions, the high presence of predators and high mortality of immature birds, and a lack of familiarity on the part of the resettled birds with the local ecological conditions. However, the partridges made intensive use of the set-aside areas in spring and autumn. The overall ecologically encouraging situation is heavily related to the banning of pesticides and to the widely practised abandonment of mechanical weeders, which the farmers might adopt instead of using herbicides.

The other eligibility requirements of the project have been partly fulfilled. As required, there has been no use of pesticides, and crop rotation has been improved by adding an additional crop. With regard to the establishment of ecological corridors, the present area under emmer cultivation is too small to enable such corridors to be established. However, the ecological compensation areas contribute to efforts being made by other related conservation projects to establish corridors. Finally, the cultivation of emmer has been officially recognized as supporting a reduction in nitrogen leaching. All in all, accompanying research indicates that this project represents an important ecological success.

With regard to the other ecological implications, the following conclusions can be drawn: (1) there has definitely been a reduction in emissions (into water, soil, air,
fauna and flora) due to the cultivation requirements; (2) ecological risks have not been exported; (3) the environmental responsibility of the participating farmers, processors, retailers and consumers is likely to have been enhanced; and (4) the cultivation method and the regional distribution of the products have surely relieved energy consumption, as suggested by the increasing evidence that regional and organic food is less energy-intensive (Jungbluth et al. 2000).

However, there is no official recognition of the beneficial ecological effects which are superior to those realized by organic farming (apart from the use of artificial fertilizers). For example, emmer cultivation does not qualify for the Swiss organic label, as, to attain this label, the whole farm would have to follow all the specified organic criteria. This would be difficult given the agricultural structure of the region (e.g. a lack of on-farm manure due to the absence of livestock husbandry). Despite this, the criteria regarding the conservation and enhancement of biodiversity in the project studied are more far-reaching than those of the organic label. Thus, this project may contribute to incipient discussion about the fact that the protection and enhancement of biodiversity are not paid enough attention in organic production (van Elsen 2000). This discussion is imminent for projects such as the one presented, as the lack of a label could become a major marketing problem due to the fact that the largest retail store chains, for instance, have decided on a public communication strategy that focuses only on strict organic production.

3.3.3 Social development and success: The project described here does not have social objectives. However, by their very nature, regional development projects are based on and may contribute to (1) the development of co-operation, solidarity, participation and trust within a region by bringing various groups and institutions together, (2) the creation of pride in and support for the region, its heritage and its economy, and (3) the improvement of awareness regarding the provenance of food, its quality and the social, ecological and economic implications of its production (D’Arcy and Guissani 1996, Maillat 1998, Hofer and Stalder 2000).

In spite of a lack of supporting data, we assume that the project has implications where social and economic practices are concerned. A number of the above mentioned favourable effects are triggered by the project’s support of a broad coalition of institutions which are based within and outside the region. Co-operation and solidarity between the players involved and identification with the product were indispensable when initiating the project. Such qualities were developed and strengthened during the project; hence, they are a precondition for and also the result of such projects. Also, new coalitions are set up, namely between nature conservation on the one hand, and farmers, processors and retailers on the other. These coalitions were of paramount importance in the early years of the project, as they triggered many synergies in areas such as fund raising, product and market development, and contacts.

Furthermore, the project enjoys wide public support. One important reason for this is the fact that emmer was cultivated in the region as early as 2000 BC. Cultivation continued until the middle of the 20th century, even giving its name to villages and areas. A farmer’s wife who bakes emmer bread and sells it in her farm shop puts it this way: ‘I really support the use of emmer because it is something from this area’. The broad public support for the project is reflected in and enhanced by wide regional, national and cross-border media coverage and by prizes that the project or single products (e.g. schnapps) have earned (Bänninger and Jenny 2000).
Further reasons for the public backing include the high level of environmental awareness in Switzerland, regional empathy, the high purchasing power of consumers, and the high quality of the products. Finally, the production and consumption of further regional products may be encouraged. Also, awareness regarding healthy, regional, ecologically produced food may be raised, as may awareness regarding the ecological implications of agricultural practice.

3.3.4 Prospects: The economic and organizational prospects of the project are positive. For the next few years, the processors plan to use emmer and to pay the farmers a fixed price for it. Moreover, negotiations are underway with the national retail store chain with a view to supplying the Swiss market with emmer bread. This would mean that more farmers and larger areas will have to be dedicated to emmer cultivation. Attracting new farmers should not pose problems while the prices of other cereals are dropping.

With regard to subsidies, the ongoing political trend away from financing production quantities towards compensating ecological services clearly favours emmer cultivation. A change in this policy, however, would result in major problems for the project. As regards the structure of the project organization, it is about to be changed into a co-operative consisting of farmers, NGO representatives, independent advisers and members of the local government. Furthermore, plans are being developed to cultivate further traditional landraces, for example potatoes and vines, following the same ecological requirements. Einkorn (*Triticum monococcum*), which is already being cultivated in a pilot project, will also be developed and will become a more important crop and product. These plans will help farmers both to increase their turnover with crops that are cultivated in an ecologically friendly way and, at the same time, to enhance biodiversity.

4. Analysis of the case study – results in relation to the variables of investigation

The four categories of variables introduced in Section 2 are discussed and analysed below.

4.1 Regional production factors

In the project, the use of *local resources* is dominant. Moreover, the use of a traditional local resource (emmer) simultaneously makes it possible to reduce external means of production (agro-chemicals). The focus on local resources is part of the identity of the project.

*Existing local knowledge*, however, can only be drawn upon to a limited degree. New methods of agricultural production have to be developed, as the traditional knowledge has either been lost or does not take account of the technologies now available to agriculture. New agricultural knowledge is developed by the research and extension centres involved, with the support by some of the farmers. Furthermore, processing experience is lacking. This gap is filled by local processors themselves (e.g. miller, baker, distiller).
Regional production and processing capacities did, however, already exist. This is a very important and advantageous asset, as new investments have not been necessary, which has helped to awaken the interest of producers and processors in joining the project.

4.2 Entrepreneurship

The project definitely involves a new combination of resources, including resources such as production and processing capacities, support and knowledge: a traditional regional resource is used again, and resources, including production and processing capacities, are used in a different way. This has been made possible by new coalitions of supporting groups involved in agriculture, conservation, policy making and research. Furthermore, modern and traditional knowledge is linked and, at the same time, new knowledge is developed. These new combinations are a precondition of development.

The project managers are also the entrepreneurs that have created and promoted most of the products. A feature that aids them in their activity is the fact that although they come from ‘outside’ the region (in this case ‘outside’ means about 50 km away!), they have a very close relationship with the region through former research activities. Their activity has consisted of taking over the product management, and of involving and integrating the producers (farmers) and processors, a few of whom turn out to be entrepreneurs themselves. The product management includes marketing and communication, as the processors and retailers involved have made very little effort in this direction. This behaviour seems to be typical where niche markets in rural areas are concerned (Ilbery and Kneafsey (1999) made the same observation). The OECD (1995b) even sees the main problems faced by rural niche markets as being either the lack of marketing or ineffective marketing. Another decisive task of the product management team has been to involve processors and retailers at the appropriate stage in the development process (from simple to more sophisticated processing, from small to large retailers).

4.3 Niche markets

The niche market strategy followed here is that of market segmentation and product differentiation. The product is specialized and it is differentiated from similar products in various ways (produced regionally and in a biodiversity-friendly way, processed locally and linked to tradition, associated with high quality of processed products, etc.). With this niche market strategy, a high level of protection (entry barriers) is pursued.

However, as the product goes national, which is at the aim, it may become difficult to maintain certain aspects of the present product differentiation. For instance, the product will lose its regional exclusivity, and large scale production may impinge on the present environmentally sound production. Furthermore, new competitors may try to enter the market.

The niche market is developed further by an additional integration of regional resources (e.g. new products, new support, new alliances), and an increasing sophistication of the products, and their promotion.
The need of the niche market strategy for rural development as recommended by the OECD (1995a, b) has been verified by the case study. Yet, niche markets are not a panacea for the many problems of lagging rural areas. They can only ease or solve a few of them as the modest beneficial effects of the economically successful case study clearly demonstrate.

4.4 Support

The project has benefited from support from various sources. The cantonal conservation administration has been supportive in allotting ecological compensation areas. The public has been very favourable towards the project by identifying with the project, by appreciating the ecological efforts, and by displaying high consumer demand. Institutions that have supported the project are the environmental NGOs that helped to set up the project and who have been marginally involved in the project management. Financial support for the project management has been provided by a public fund for nature conservation and by the research and extension centres. Most probably, the financial burden would have been too large for one single group or institution, which might have discouraged such an undertaking. Beyond making the financing possible, the patchwork financing of this project has the beneficial side-effect of involving various groups in the project and securing their support, although it involves major fundraising and communication efforts on the part of the project management.

4.5 Success factors

Various success factors had to be united in order to initiate and successfully develop a project like the one described here. A synthesis of the variables discussed above brings the following success factors to the fore (see also Jenny 2000b, Schelske 2000):

1 Regional production factors
   (a) The development of new local knowledge as regards emmer cultivation and processing has been crucial to the success of the project. This knowledge has been acquired by the research institutes and by the processors themselves.
   (b) The existence of regional production and processing facilities has helped greatly to involve farmers and processors, as no investments were needed.

2 Entrepreneurship
   (a) The initiators and project leaders have displayed clear entrepreneurial skills as regards creativity, professional project management, broad professional background, endurance and tenacity, and these are enhanced by their familiarity with the region and the people living there.
   (b) The new products are definitely innovative and adapted to the regional context. For this reason, they attract the interest of various parties (processors, consumers, the public, the media, and policy makers).

3 Niche market
   (a) The niche strategy followed is that of specialization and of product differentiation; this has attracted a broad base of consumers and has built up high entry barriers.
4 Support

(a) Various kinds of support have been essential: financial support providing start-up capital and subsidies to farmers; ideological support by policy makers and NGOs; public support, evident from the wide media coverage and from the number of customers with considerable purchasing power who identify with this regional product.

This case study shows that the assemblage of advantageous conditions is, to a certain degree, coincidental. Recognizing and harnessing these conditions is not self-evident, yet it is indispensable to counterbalance the difficulties of a new entrepreneurial endeavour. The difficulties in the project described mainly result from the fact that a new product and market had to be developed starting from the agricultural production to the retailing of the products. Moreover, the agricultural cultivation of a new product by many small farmers had to be co-ordinated, and processors and retailers with little professionalism had to be involved. In the section that follows, we draw conclusions and suggest implications for policy stemming from the experiences within this project.

5. Conclusions and implications for policy

The conclusions and implications concern financial support, regional policy, and niche markets.

The case study has shown the importance of start-up capital, ideally provided by several institutions – from the private and public sector, from research, and from NGOs. To begin with, such money must be available within the relevant institutions. Conducive laws and regulations may favour the establishment of such funds for environmental undertakings, for instance by awarding tax breaks for donations and legacies, by supplementing start-up capital from non-public institutions with public money, and by allowing research institutions to spend small amounts on such projects.

Further, it is important that local entrepreneurs, particularly the initiators of projects such as the one described here, be encouraged and supported. Existing platforms for exchange and professional aid provided by governmental institutions or public-private partnership organizations should be maintained and extended, as there is a general need for capacity building and training in management and marketing (see also OECD 1995a, b, Ekins and Newby 1998). Such measures also support the creation of networks (Schelske 2000).

Another task for regional policy is to strengthen the knowledge base. In the emmer project, it was regionally-based research by the ornithological research centre and the agricultural extension services that triggered the project. One way of developing regionally-specific knowledge of this kind is by directing research towards local investigations.

A key element of a helpful political framework is the role of public administration. Public administration has to be a facilitator, a consultant, a partner and a member of the network rather than being a planner and an exponent of governmental authority that disposes of money and power. Hence, public administration and policy makers need to extend their roles.

Also, it is of utmost importance that small and medium sized processors are maintained. This means that policy has to halt the further centralization of processing
facilities (e.g. dairies and slaughter houses in the European Union) designed to yield economies of scale or to facilitate control. Without small processors, it is very difficult – if not impossible – to set up regional niche markets, and such projects cannot continue if the small processors curtail their involvement. In the same vein, conditions that favour the creation of niche markets have to be maintained, one condition for which can be the existence of small processors.

Finally, financial support to farmers for the lower harvest and labour-intense cultivation has been vital in the project studied. Indeed, it cannot be expected that agriculture that creates ecological and cultural by-products such as the protection of landscapes, landraces and farmland wildlife and flora comes free of charge, even though the agricultural product may yield relatively high prices due to the absence of price competition (niche market) and due to high value-added. Hence, ways to compensate those who provide ecological and cultural by-products need to be devised.

The most interesting feature of the project investigated is that it was prompted by purely ecological objectives. When the implementation of such a project is combined with entrepreneurship and a conducive context, we see that such a project can not only be economically sound but also can initiate a broader process of sustainable regional development.

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Notes

1. In the first case, aspects of a product that are different from those sold by other sellers are highlighted, and it is the willingness to pay for a certain aspect that decides whether the product with the differentiated aspect will be bought. The differentiation is a creation of the marketing experts. In the second case, it is the realization of a prototype model, a specialization of the product itself, that differentiates it. This specialization is often triggered by a demand from a particular consumer group, which is, in theory, willing to pay for it.
2. Starting from a good knowledge of the case study due to previous research on the topic of regional agricultural projects, we began to define the research question and the hypothesis. Simultaneously, we deepened our knowledge of the relevant literature on regional development, on agricultural projects aiming at nature conservation, on entrepreneurship, and on niche markets. Then we prepared and completed the data collection using the instruments mentioned above. While analysing our data and starting to write the results and interpretations down, we were able to finalize the hypotheses. At the same time, we returned to the literature and deepened our understanding. The results were validated by discussions among the four authors, by cross-validating the results, and by further enquiries with the people involved in the case study.
3. For a further description of this case study, see Jenny 2000a.
4. The size of the participating farms ranges from 12 to 30 ha (the regional average was ca. 25 ha in 1998; the Swiss average was 17.4 ha; Swiss Federal Statistical Office 2001).
5. The contribution margin includes all costs and returns related to the agricultural production (cost of production, proceeds from sales). Hence, the renouncement of agro-chemicals and the higher labour intensity are reflected.
6. The two subsidies provided here are: Cultivation Bonus (CHF 770/ha/a) and Wildflower-strip-Bonus (CHF 3000/ha strip/a). A third category of subsidies is paid, but this also applies to conventional cereal cultivation (Extenso-Contribution, CHF 400/ha). For further details see Schelske 2000: 205 and the relevant regulations (Direktzahlungsverordnung and Anbauprämienvorordnung; http://www.blw.admin.ch/fakten/texte/d/dzueber.pdf). In 2001, the Cultivation-Bonus was cancelled. However, a different,
lower bonus (CHF 400/ha) was introduced, for which most emmer farmers are eligible. In spite of this lower bonus, the cultivation of emmer is still financially attractive, as the national price of wheat is dropping, unlike the price of emmer.

7. To maintain confidentiality, firm-specific sums are not presented and aggregations of sectors are made so as to veil the turnover of specific enterprises. Furthermore, we have to point out that the calculation of the turnover is approximate, as many small enterprises either do their accounting badly or do not want to give exact figures for confidentiality reasons. Hence, we had to make some of the calculations ourselves.

8. In the EU, the annual growth in organic farms ranged from 15 to 29% between 1985 and 1990, and from 15 to 56% in the 1990s. The annual growth in organically farmed areas ranged from 12 to 42% in 1985–1990, and from 23 to 52% in the 1990s (data are from the Organic Centre Wales, University of Wales, Aberystwyth, http://www.organic.aber.ac.uk/stats.shtml).

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