

The Impact of Ecotourism on Farming Systems and Rural Agricultural Development A Case Study from Northern Lebanon

Marwan Owaygen

University of Hohenheim/Germany
University of Balamand/Lebanon

Fourth European Symposium
Workshop 2: Farming and Rural Systems Methodologies

Abstract

The economic development in rural areas of developing countries is usually characterised by extremely low income groups leading to the overuse of the natural resources. This is the prevailing situation in the Mountain Region of Akkar in Lebanon where deforestation for charcoal production, overgrazing and abandonment of the terraced agricultural land lead to ecological imbalances and unsustainable resource use. This paper aims to find a balance among conservation of natural resources, maintenance and improvement of living standards of local families and integration of ecotourism. It focuses on the testing of an ecologically sound and economically viable concept. Two study areas in the North-Lebanon province were selected: the Mountain Region of Akkar and the Cedar Protected Area. Based on the analysis of present and past developments of farming families and tourism, the concept of implementation of national parks in the Mountain Region of Akkar for soft tourism has been identified. The impact of this implementation has been assessed on family level, using a comparative static optimisation models. It was found that ecotourism would create the necessary financial conditions for smallholder communities in order to be able to maintain their living standard though the income loss resulting from the implementation of national parks. This implementation will reflect positively on the rural agricultural development through the sustainable use of natural resources, specially woodlands, the activation of the agricultural sector and the creation of off-farm activities.

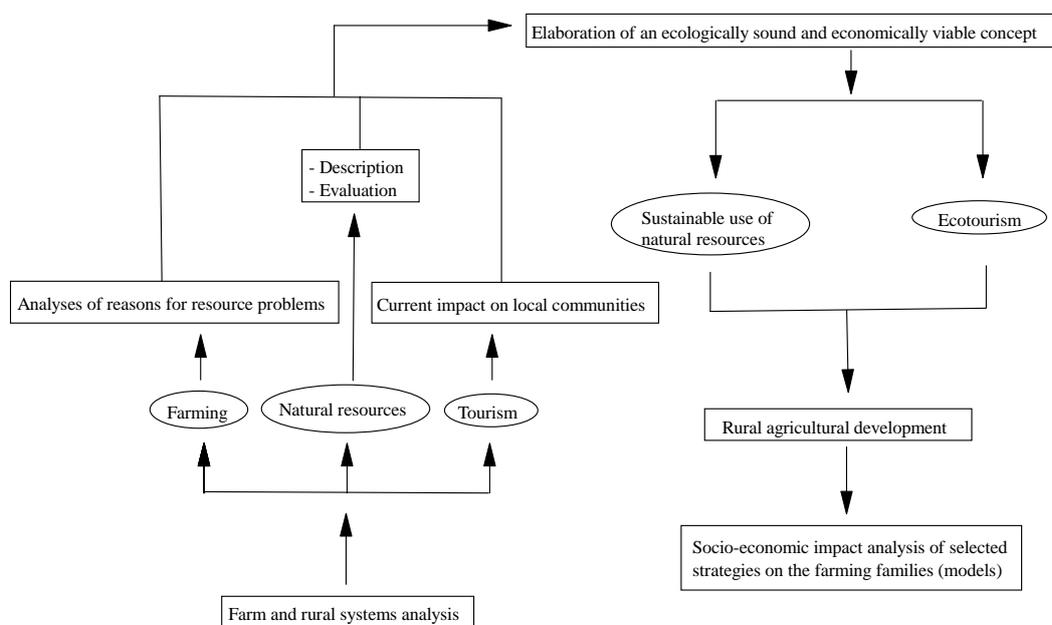
1. Introduction

The economic development in rural areas of developing countries is usually characterised by extremely low income groups. This situation is especially found in the marginal agricultural areas and leads to the overuse of the natural resources by the low income groups. Thus, the long term carrying capacity of these regions is often not guaranteed any more. In mountain areas, as can be found in Lebanon, nature is very sensitive and the overuse of resources such as woodlands, leads to ecological imbalances and to low economic sustainability. This is the prevailing situation in the Mountain Region of Akkar in Northern Lebanon which could be considered as the least developed rural region in the country and one of its richest areas in natural resources. In this region, three practices contribute to the depletion of these resources and have negative impacts on their sustainable use. They are: 1) deforestation of the public woodlands in order to produce charcoal for Lebanese market, 2) overgrazing of the native vegetation by goats and 3) abandonment of the terraced agricultural land resulting in the degradation of terraces and soil erosion.

2. Objectives and methodology

A study was carried out to find a balance among conservation of natural resources, maintenance and improvement of living standards of rural local families and integration of ecotourism. It focuses on the testing of a concept which is considered to be both ecologically sound and economically viable for natural resources in the Mountain Region of Akkar and for communities living in this region respectively. Two study areas in the North-Lebanon province were selected: the Mountain Region of Akkar and the Cedar Protected Area. The first study area presents the area of resource problems, the second reflects some of the potential solutions. In the methodological concept, the farm-family based analysis is combined with the regional analysis. Tourism and related possibilities for rural development, in addition to properties and use of natural resources¹, present the elements of the regional analysis. Results from analysing the reasons responsible for resource use problems in the Mountain Region of Akkar and the on-going tourism in the Cedar Protected Area, will be used to predict a kind of concept for future rural agricultural development (figure 1). Analysis of farming components is based on the farming system approach which is an holistic and behavioural approach placing people in the centre (Doppler, 1991). It provides the philosophy, the concept and the strategy for developing and introducing solutions to problems at the farm-household and village level (Doppler, 1993). The farm-family analysis was based on data collected from a survey of the agricultural year 1995/1996 covering 75 farming families distributed in 15 villages of the Mountain Region of Akkar and classified into 3 farming systems related to the three problems (deforestation, overgrazing and abandonment of terraces). In addition, a tourist survey (n=96 tourists) was also carried out in the Cedar Protected Area. For measuring the future impact of selected strategies and scenarios on family level, a comparative static linear programming is applied, using the mean values of data of the selected families in each farming system.

Figure 1: General concept of the study



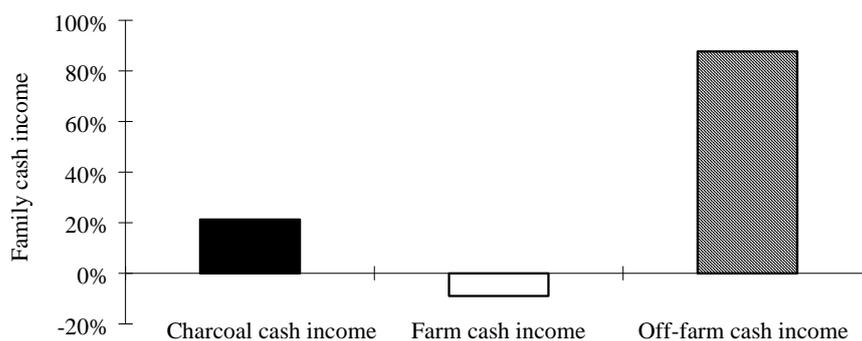
¹ The analysis of natural resources (woodlands, wild life and water resources) in the Mountain Region of Akkar will not be treated in this paper.

3. Overuse of land to satisfy family needs

Based on the farm-household analysis, it was found that families in the Charcoal Farming System dispose of three sources of cash income in order to cover the family cash expenses¹ (figure 2). The farm does not contribute positively to providing the cash for this purpose. The family expenses are calculated to be US\$ 6,452 on average. This amount is more than the average family cash income generated by the three sources (US\$ 6,054). An average amount of debt per family of US\$ 873 is used to cover the deficit of the family expenses (minus US\$ 398) and the farm investment costs (an average of US\$ 175 per family) such as the purchase of new trees, animals and land reclamation. More than half of the family expenses are for food (figure 3). In addition to health care, energy and water costs, the expenses for these basic needs amount to more than two thirds of the total family expenses. In other words, the minimum basic needs of the family, presented by food, energy, water and health care, require 72% of the total family cash income. Without the charcoal activities, the average cash balance of the family (including debts) would be minus US\$ 930. In this case, only 88% of the family expenses could be covered. Having already a low living standard, a reduction in the household expenses would lead the family to a critical situation. In other words, in addition to the income, liquidity is of importance in the Charcoal Farming System since the families are strongly market oriented and are not exclusively dependent on subsistence production. Without charcoal production, illiquidity and income loss would be a central problem.

In the Goat Farming System, the income resulting from goat keeping contributes to 61% of the total family income. Goat keeping is mainly based on the free grazing of the native vegetation. A reduction of the grazing period and the resulting need to purchase fodder would decrease the family income and would affect the living standard of the families.

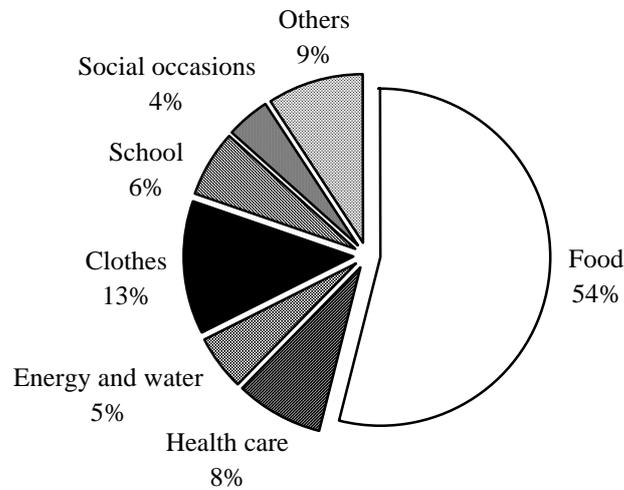
Figure 2: Components of the family cash income² in the Charcoal Farming System, Mountain Region of Akkar, Lebanon, 1995/1996



¹ Family cash expenses encompass the expenses of food, water for the household, energy, clothes, school, social occasions, transportation and other household related items.

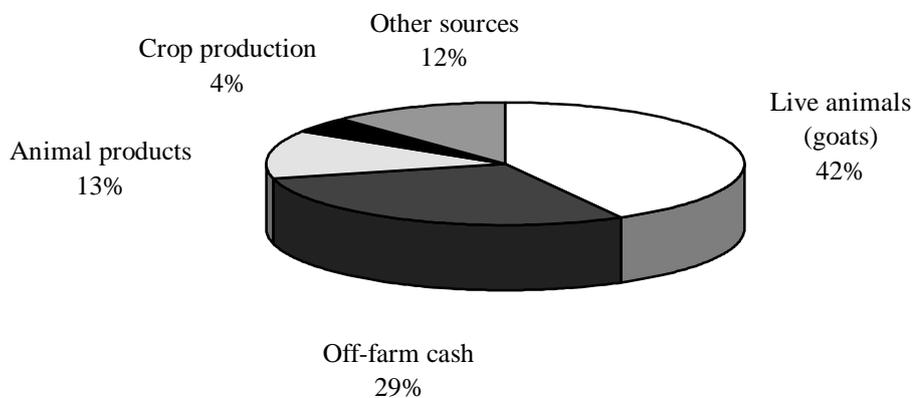
² Charcoal income is an off-farm income since it is not generated from the own land. It is considered here separately from other off-farm incomes generated by other off-farm sources.

Figure 3: Sectors of the family expenses in the Charcoal Farming System, Mountain Region of Akkar, Lebanon, 1995/1996



The sale of goats is the most important source of the cash inflow in the family (figure 4). This indicates the importance of goat keeping in providing the cash needed to cover the household cash expenses. In other words, goat keeping is essential for maintaining the living standard of the families. One can conclude that families responsible for resource overuse (namely deforestation and overgrazing), due to a lack of alternatives, behave correctly according to their own economic interest. However, resource overuse is not a sustainable activity for goat keeping families while deforestation for charcoal production reflects negatively on both the society and the nation as a whole. It is obvious that the development of alternatives for such small farmers is of crucial importance.

Figure 4: Sources of the cash inflow in the Goat Farming System and their percentage, Mountain Region of Akkar, Lebanon, 1995/1996



4. Features of existing tourism

The analysis of data collected from the survey in the Cedar Protected Area shows that the on-going form of soft and controlled tourism presents a possible concept for other regions. Because such tourism depends on urban tourists who possess good buying power and are interested in nature-based tourism, it is possible to combine nature protection and the buying power of tourists. The Cedars tourists were asked about their motive to visit natural protected areas in the Mountain Region of Akkar in the case that they existed. The majority of the answers referred to the enjoyment of nature (table 1). This could be related to the fact that 70% of the interviewed persons come from urban areas. 10 % of the tourists bluntly indicated that the reason for visiting protected areas in the Mountain Region of Akkar would be to get away from the city. Reasons related to protected areas (encouragement, education, rural life and scientific interest) were mentioned by around one fifth of the interviewed tourists.

Table 1: Motivations of the interviewed tourists for their potential visits to protected areas in the Mountain Region of Akkar, Cedar Protected Area, Lebanon, 1996

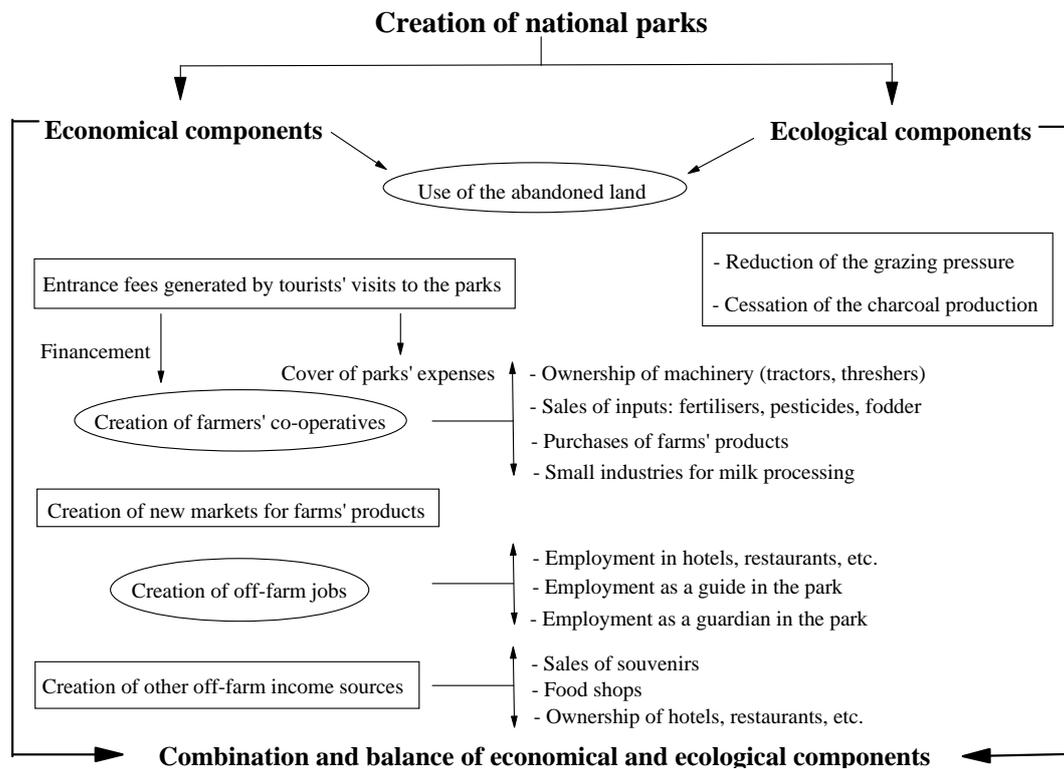
<i>Motivations for visiting protected areas:</i>	<i>% of the interviewed tourists (n=96)</i>
Enjoyment of nature	77
Discovery of a new area	46
Encouragement of the protection	7
Ecological education of children	4
The concept of protected areas	3
The way of life of rural communities	3
Scientific interest	2
Showing the protected areas to friends or to relatives visiting the country	2

Source: Owaygen, 1999

5. An ecotourism concept for rural development

There is an increasing recognition that environmental protection must include economic considerations that both influence the political support for government programs and change the economic incentives for resource exploitation. One manifestation of this perspective is the recent interest in ecotourism as a mean to promote sustainable development, while, at the same time, creating an economic justification for the preservation of natural resources (Alderman, 1994). It is agreed philosophically that ecotourism, when managed properly, should conserve the environment and benefit local people (Filion *et al*, 1994). Based on the analysis of present and past developments of farming families and tourism, a concept of implementation of national parks in the Mountain Region of Akkar for soft nature-based tourism has been developed. The ecological and economical components of these parks are shown in figure 5. It is expected that the activation of the agricultural sector through the creation of co-operatives and the new market for agricultural products will result in the use of the abandoned land. This use is considered to be under the ecological and economical components of the creation of national parks in the Mountain Region of Akkar. This creation is expected to induce a rural agricultural development, based on four selected components of this kind of development, presented in figure 6. The Cedar Protected Area has lead through the visits of the tourists to the creation of off-farm activities for the local communities and to the stimulation of the agricultural sector.

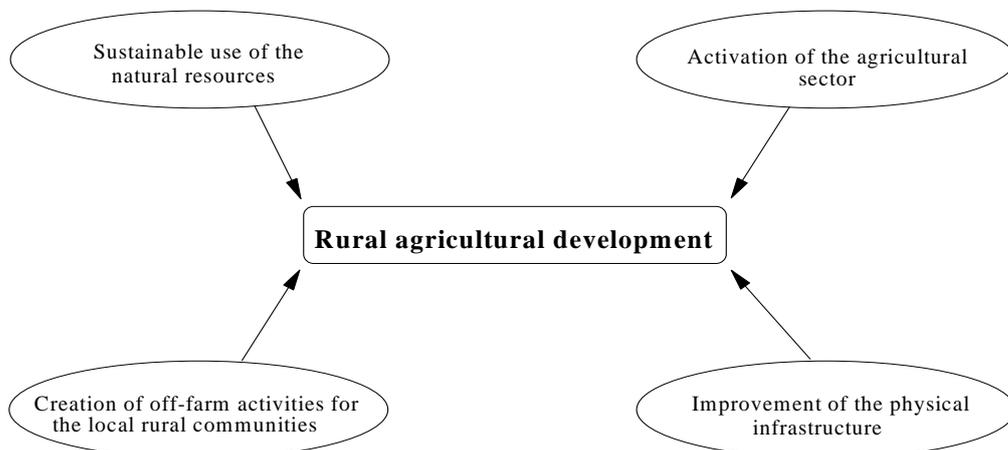
Figure 5: The concept of rural development through national parks in the Mountain Region of Akkar



Source: Owaygen, 1999

The protection of natural resources in the Mountain Region of Akkar, specially the woodlands, through the creation of national parks is expected to have similar impacts. The protection of woodlands from deforestation and overgrazing will result in a sustainable use of this resource by a soft ecotourism and this sustainability will be reflected by the sustainable activation of the agricultural sector and the sustainable availability of related off-farm activities. The creation of national parks for ecotourism purposes requires physical infrastructure and management. The physical infrastructure is supposed to be simple based on the attitudes and opinions of the interviewed tourists in the Cedar Protected Area.

Figure 6: Impacts of national parks on rural agricultural development



6. Quantifying future impacts of ecotourism

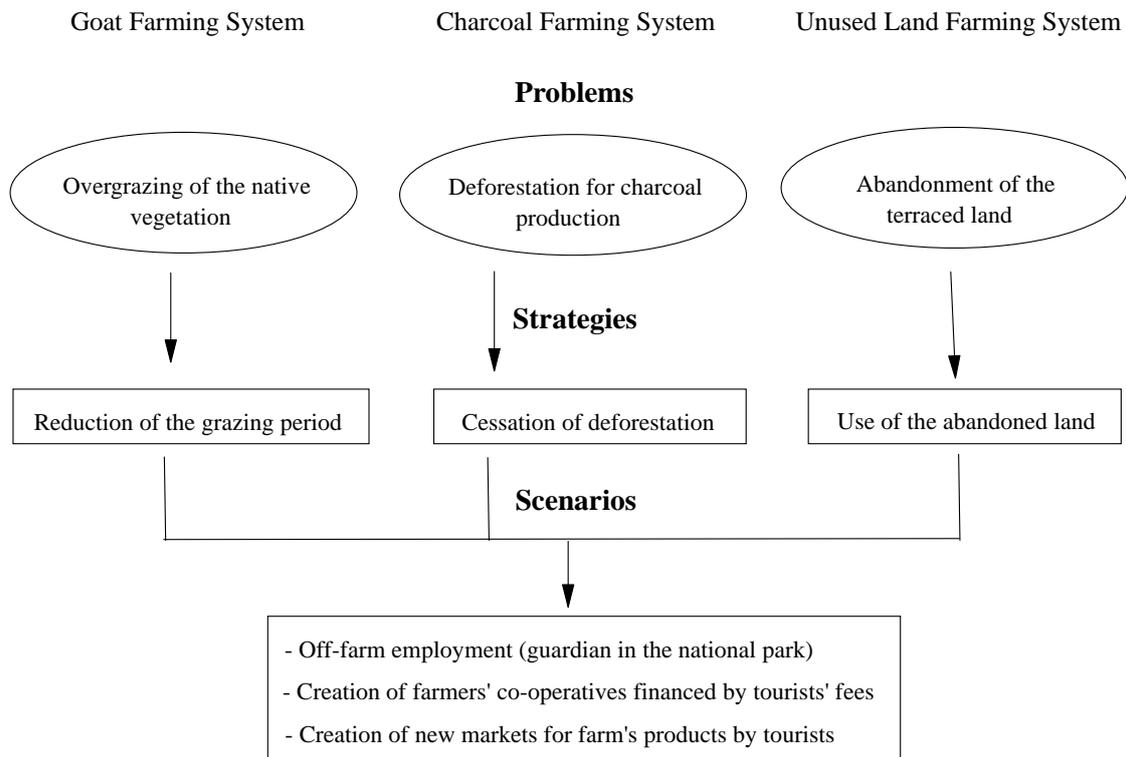
The future impact of ecotourism will be assessed on family level. Optimising models are applied for each of the three farming systems using information collected during the farm-household survey for the agricultural year 1995/1996. The objective function is intended to maximise the family income. Validation of the models reveals that they do not show much difference when compared to the real situation in the survey year. The values of family income resulting from the basic models are slightly higher than those in the survey: by 6% for the Charcoal Farming System, and 3% for the Unused Land and Goat Farming Systems. The principal idea behind validation of the basic models is to find out how close their results are to reality, and, therefore, to determine whether the basic models are applicable in testing future strategies and scenarios (Al-Baquain, 1997).

The model results of the different strategies and scenarios are compared with the results of the basic model without the defined strategies and the differences are interpreted as the impact of the tested measures on the farm/household and on resources. Focus was placed on the combination of measures which lead to the protection of natural resources in the Mountain Region of Akkar and which offer a set of alternatives or possibilities to the families in the three farming systems in order to maintain and improve their living standards along with conservation of resources (figure 7). Strategies which would lead to the reduction of resource use problems were selected. These strategies are directly related to the three resource problems, namely, overgrazing of the native vegetation by goats, deforestation for charcoal production and soil erosion as a result of the abandonment of terraced agricultural land.

Quantifying future impacts of strategies of ecotourism shows the following results:

- Reduction of overgrazing by goats is possible by reducing the grazing period from 12 to 8 months. This was possible through additional off-farm income used for buying animal feed in the four months of non-grazing. It was found that, when combined with the generation of an off-farm employment as a guardian in the national parks for example, for a male member whose age is between 14 and 60 years old at a daily wage of US\$ 10.03 for 298 days per year, such a strategy would lead to a slight increase of the family income, compared with the basic model (US\$ 7,787). It would decrease the grazing pressure on the native vegetation by reducing the grazing period by one third and the number of grazing animals by 30 %.
- Reduction of deforestation is possible by substituting charcoal production through income generating activities in marketing other products. It was found that, when combined with the creation of farmers' co-operatives offering a set of measures to the farmers and with the new markets for existing farm products aimed at tourists, such a strategy would lead to a slight increase of the family income (2,11%) as compared to charcoal production. The measures offered by the co-operatives are related to: 1) decrease of the sale price of fertilisers and pesticides as well as the costs of hired machinery by 20 %, 2) purchase of the field crops production from farmers and 3) increase of the quantity of sold milk by farmers by 100% as co-operatives create small units for milk processing. The scenario concerning the creation of new market for existing farm products aimed at tourists is based on the survey in the Cedar Protected Area where it was revealed that farmers were selling their products directly to tourists along roads leading to the protected area.

Figure 7: Strategies and scenarios related to the implementation of national parks and ecotourism in the Mountain Region of Akkar



- Avoiding the breakdown of terraces and erosion, terraces should be kept in use. The creation of farmers' co-operatives would allow to increase the farm cash income per the additional resulting labour unit four times more than the resulting amount when the abandoned land is used without the measures offered by co-operatives.

7. Conclusion

The implementation of national parks in the Mountain Region of Akkar and the related ecotourism activities would require a number of activities not referred in this article (such as improvement of infrastructure, land use planning, etc.). With respect to agriculture and natural resources it could contribute to the improvement. It would provide additional sources of income for local families by generating off-farm activities and would activate the agricultural production, by promoting the creation of farmers' co-operatives and of new markets for farm products through tourism. This would create the necessary financial conditions for smallholder communities in order to be able to use the resources in a sustainable way and to preserve nature. Families with goats would be able to afford stationary husbandry during a certain period of the year and thus reduce the pressure on the native vegetation. The loss in the family income resulting from the cessation of charcoal activities would be compensated. The increase of the farm cash income would induce the farmers to use their abandoned land in the future.

One can conclude that the opportunities offered by ecotourism to the families would maintain their living standards by compensating the income loss resulting from the reduction of grazing period and the cessation of charcoal production as a consequence of the implementation of national parks in the Mountain Region of Akkar. Through the sustainable use of natural

resources, specially woodlands, the creation of off-farm activities, the activation of the agricultural sector and the improvement of the physical infrastructure, the implementation of national parks in the Mountain Region of Akkar with ecotourism activities will reflect positively on the rural agricultural development in this region.

References:

Al-BAQAIN, R., 1997. Socio-Economic Interactions Between Low and High Potential Agro-Ecological Zones and Farming Systems in Jordan. In: Doppler, W., (ed), Farming Systems and Resource Economics in the Tropics. Vol. 28 Wissenschaftsverlag Vauk Kiel KG.

ALDERMAN, C.L., 1994. The Economics and the Role of Privately-Owned Lands Used for Nature Tourism, Education, and Conservation, edited by MUNASINGHE, M. and MCNEELY, J. In: Protected Area Economics and Policy Linking Conservation and Sustainable Development. World Bank, Washington, D.C.

DOPPLER, W., 1991. Landwirtschaftliche Betriebslehre in den Tropen und Subtropen. Eugen Ulmer Verlag, Stuttgart.

DOPPLER, W., 1993. Definition and Concepts of Farming Systems, Agricultural Research and Development Toward Sustainable Production Systems, Technical paper prepared for NATURA/NECTAR Project.

FILION, F., *et al.*, 1994. Valuing a Protected Tropical Forest: A Case Study in Madagascar, edited by MUNASINGHE, M. and MCNEELY, J. in: Protected Area Economics and Policy Linking Conservation and Sustainable Development. World Bank, Washington, D.C.

OWAYGEN, M., 1999. Protecting Nature and Rural Agricultural Development: The Integration of Ecotourism in Northern Lebanon. In: Doppler, W., (ed), Farming Systems and Resource Economics in the Tropics. Vol. 34 Wissenschaftsverlag Vauk Kiel KG.