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NATURE PROTECTION AND TOURISM SUPPORT BALANCED DEVELOPMENT IN THE GREEN BELT OF FENNOSCANDIA

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The Green Belt of Fennoscandia (GBF) is a loose concept including nature reserves and various other features depending on the viewpoint. This study explores the use of statistical units, subregions, for defining the Finnish part of the GBF to include these varying standpoints. The analysis indicates that subregions are suitable units for studying and defining GBF from the point of view of the society. Nature protection and development of tourism support each other in GBF, but forest industry – but not forestry – is decreasing in the area. The results also support the use of the extensive delineation (based on subregions) suggested for the Finnish part of the GBF. GBF is a concept and tool for advancing sustainable development and it manifests both principles and practices. As an extensive ecological object when delineated using subregions, GBF also offers plenty of opportunities for national and international co-operation in sustainable development approaches including the topical issue of mitigating the effects of climate change.

Key words: Green Belt of Fennoscandia, nature protection, tourism, nature tourism, forestry, border area, regional development.

Т. Макконен, Т. Хокканен. ГАРМОНИЧНОЕ СОЧЕТАНИЕ ОХРАНЫ ПРИРОДЫ И ПОДДЕРЖКИ ТУРИЗМА В РАЗВИТИИ ЗЕЛЕННОГО ПОЯСА ФЕННОСКАНДИИ

ЗПФ – это широкое понятие, включающее особо охраняемые природные территории и различные объекты, в зависимости от точки зрения. В данной работе исследуется использование статистических единиц – субрегионов, в определении финляндской части ЗПФ, которая учитывала бы все разнообразие точек зрения. Анализ показывает, что субрегионы подходят в качестве единиц для изучения и определения ЗПФ с точки зрения общества. На этой территории охрана природы и развитие туризма поддерживают друг друга, но при этом лесная промышленность (но не лесное хозяйство) сокращается. Наши результаты также говорят в пользу крупного деления (основанного на субрегионах), предлагаемого для финляндской стороны. ЗПФ – это концепция и инструмент, способствующие достижению устойчивого развития, что проявляется как в его принципах, так и в деятельности. Как экологический объект огромной площади, он, будучи разграничен по субрегионам, дает массу возможностей для внутреннего и международного сотрудничества по подходам к устойчивому развитию, включая актуальные вопросы предотвращения последствий изменения климата.

Ключевые слова: Зеленый пояс Фенноскандии, охрана природы, туризм, экологический туризм, лесное хозяйство, приграничные территории, региональное развитие.

Introduction

Tourism is considered one of the most rapidly growing sectors of livelihoods [Hall and Page, 1999], and especially nature tourism is expected to expand [Fennell, 2003]. Nature tourism is one of the major branches of tourism also in Finland [Saastamoinen et al., 2000], and hopes have set on nature tourism incomes and employment to revive rural economies and improve the rural areas' age structure. At present old age classes are prevalent in rural areas. The numbers of visitors in nature reserves are considerably high and consequently also their influence on regional economies is substantial [Kangas et al., 1998; Rinne, 1999; Pouta and Sievänen, 2001; Ovaskainen et al., 2002; Eisto, 2003; Berghäll, 2005; Huhtala, 2006; Puhakka, 2007]. In general, the environments in Eastern and Northern Finland are best suited for nature tourism [Silvennoinen and Tyrväinen, 2001].

Nature and healthy environment are at present increasingly important attractions when tourism resorts will be chosen for visiting [Maaseutupoliittinen yhteistyöryhmä, 2004]. The nature attractions are the basis for development of tourism, and good service sector is needed to support and strengthen it [Kauppila, 1998]. The interrelationship between tourism and nature is evident, and existence of nature reserves increases the probability that the area will be chosen to be visited [Huhtala et al., 2004]. Nature is the basic resource for tourism, and maintaining nature in good condition requires environmental responsibility of activities [Kauppi, 1996]. Nature tourism can simultaneously promote well-being of the nature and local economy, if nature has been well managed [Naskali, 1995].

Development of nature tourism requires nature. Finland is a country of forests, which still are in very intensive economic use. Wood and paper industry corresponds to 18,9 % of the value of industrial production [Tilastokeskus, 2008] and forest industry comprised 24 % of Finnish exports in 2004 [Metsäntutkimuslaitos, 2007]. Forestry and nature protection are sometimes considered being competitors for the same resources, but only 13 % of the forested land is protected or in restricted economic use [Metsäntutkimuslaitos, 2007]. Mainly these areas are the ones which are used for nature tourism.

This article aims at discussing and defining the Green Belt of Fennoscandia as a combining unit of nature, nature protection, recreation and tourism. Empirical part of the article is based on statistical relationships between nature protection and tourism using administrative statistical units (subregions) for comparing the regional

differences. Forestry is the major user of forested nature. These factors have been taken into account in the analyses, but the emphasis here has been on nature protection and tourism.

Nature protection and tourism as regional development tools

As influence of tourism is growing both tourism and nature tourism have been increasingly harnessed for regional development [Mathieson and Wall, 1992; Vuoristo, 2003]. Tourism is used for regulating structural changes and diversifying economy at the local level; on provincial and national level the goal is to balance differences in regional development [Järviluoma, 1997; Kauppila, 2000]. Tourism increases incomes and improves employment and economic structure, and it also encourages entrepreneurship etc. [Mathieson and Wall, 1992; Ryan, 2003].

Several studies estimating regional economic effects of tourism show that tourism has considerable positive regional and national influences on employment and incomes [Saarinen, 2001; Laakkonen, 2002; Konttinen, 2005]. Also tourism directed to nature reserves is important in regional economy [e.g. Kangas et al., 1998; Rinne, 1999; Berghäll, 2005; Huhtala, 2006]. Incomes and employment linked to nature tourism and recreation are especially important in Northern Finland. Nature tourism jobs are particularly valuable in remote areas which otherwise offer poor opportunities for employment [Berghäll, 2005]. Tourism is a good development tool in rural areas as it employs with small economic turnover [Kauppila, 2000]. In remote areas tourism, and especially tourism based on nature attractions, is practically the only line of business having natural preconditions to develop [Saarinen, 2001; Laakkonen, 2002; Ympäristöministeriö, 2002].

Aho (1997) considers tourism a sector of economy which is a true opportunity for areas far away from centres. Indeed, in Finland a significant part of tourism businesses is situated in such peripheries where other livelihoods cannot flourish. Tourism seems to be a sector which does not conform to traditional centre – periphery theories used in regional development [Myrdal, 1969; Valtioneuvoston kanslia, Talousneuvosto, 2000; Laakkonen, 2002]. As a summary of the role of tourism Aho (1997) presents three perspectives: 1) tourism sector can be used in implementing traditional goals of regional policy such as management of employment; 2) tourism sector has good opportunities to be developed to an exemplary area of innovative actions in peripheries; 3) tourism sector offers versatile opportunities for fine-tuning regional development.

Concept and delineation of the Green Belt of Fennoscandia (GBF)

The Green Belt of Fennoscandia is a loose term coined in the early 1990's. As nature protection in the remote border areas has been - and still is - the backbone of GBF, it is often considered to include only the present and planned nature reserves along the Finnish – Russian – Norwegian border [see, e.g. Ympäristöministeriö, 2003]. However, from the beginning also society has been considered a crucial part of GBF [Titov et al., 1995]. UNESCO's biosphere reserve concept includes also culture objects and the society where the nature and culture objects are embedded [see, e.g. Lyytikäinen et al., 2006]. The most comprehensive perception about the Green Belt of Fennoscandia includes the administrative units (such as in Finland municipalities or, in Russia, districts) where the nature objects are situated [Hokkanen et al., 2007]. The Green Belt of Fennoscandia is also considered a part of the European Green Belt, a joint effort to create an ecological object through Europe, from the Mediterranean Sea to the Arctic Ocean.

The Green Belt of Fennoscandia (GBF) is easy to define in terms of existing nature reserves only (Fig. 1). Any societal use of the concept requires including more areas into the sphere of GBF as geography and activities need to be taken into account. For this kind of a more comprehensive GBF there is no exact delineation available, but Makkonen & Hokkanen (2006) have suggested a delineation of GBF which includes 44 municipalities from the Finnish side and 12 districts from the Russian side. This delineation is being used as the basis for this study.

Delineation of GBF for this study has been done using various criteria. As GBF includes nature protection and society together [Titov et al., 1995] delineation aims at defining a functional area which maximises interactions between neighbouring countries in terms of ecology, economy and social structures. For practical reasons this delineation has not included Norway, although Norway is a natural partner in GBF cooperation. Subregions as economic units used in Finnish statistics were chosen as observation units and to be used in statistical analyses (Fig. 3). This study thus gives background for further definition of the GBF.

Methods

The connections between nature protection and tourism are examined in this study using basic correlation-, regression- and principal component analyses. The correlation coefficient describes the

intensity of interdependency of two variables, but does not, as such, tell anything about the cause – effect relationship of the phenomena under study. The function of regression analysis is to examine the connection between quantitative variables, when the relation between these variables is not symmetrical. The goal is to explain for example the variation in values of variable Y with the values of variable X. [Grönroos, 2003]. The basic idea of principal component analysis is to compact the information of several variables to a few principal components, which can also be called dimensions, in a way, which ensures that as little of the original information is lost as possible. The rotation method makes the principal components stand out more from each other. In this study the Oblimin rotation method was selected. The component scores illustrate the position of units (i.e., the regions in this study) in main component axes [Katajisto, 2006].

Tourism has been described in this study by the share and number of employees in accommodation, restaurants and visitor programme services. Nature reserves have been described using subregional total area of those nature reserves which are considered most important for tourism (wilderness areas, national parks, strict nature reserves, mire reserves and old growth forests). These variables were added into the group of several variables describing regional development (such as age and gender structure, crime rate, education, GDP, living-conditions, population change, unemployment rate etc.) when performing principal component analysis (for the complete analysis see Makkonen (2008)). The variables describing regional development were chosen by the guidelines and examples of previous surveys on regional development in Finland [Hautamäki et al., 1969; Kehitysalueiden neuvottelukunta, 1973; Alueellisen kehittyneisyyden tutkimusryhmä, 1979; Siirilä et al., 1990; Järvinen, 1999].

Results and discussion

Total area of nature reserves decreases from South to North along the border (Table). The number of employees in tourism sector and in forestry and agriculture tends to be higher, and that of industrial employees lower in the North (table). Service sector is the most important employer in all subregions. Forest industry is strong in southern part of Finland (Fig. 2) while the number of forestry plants is still decreasing especially in the northern and eastern parts of the country. Most of the processing units there are representing mechanical wood processing (e.g., sawmills, plywood). The future of the existing chemical processing units in remote parts of the country looks grave.



Fig. 1. Existing and proposed nature reserves along the Green Belt of Fennoscandia [Data: Finnish Ministry of the Environment, 2008]

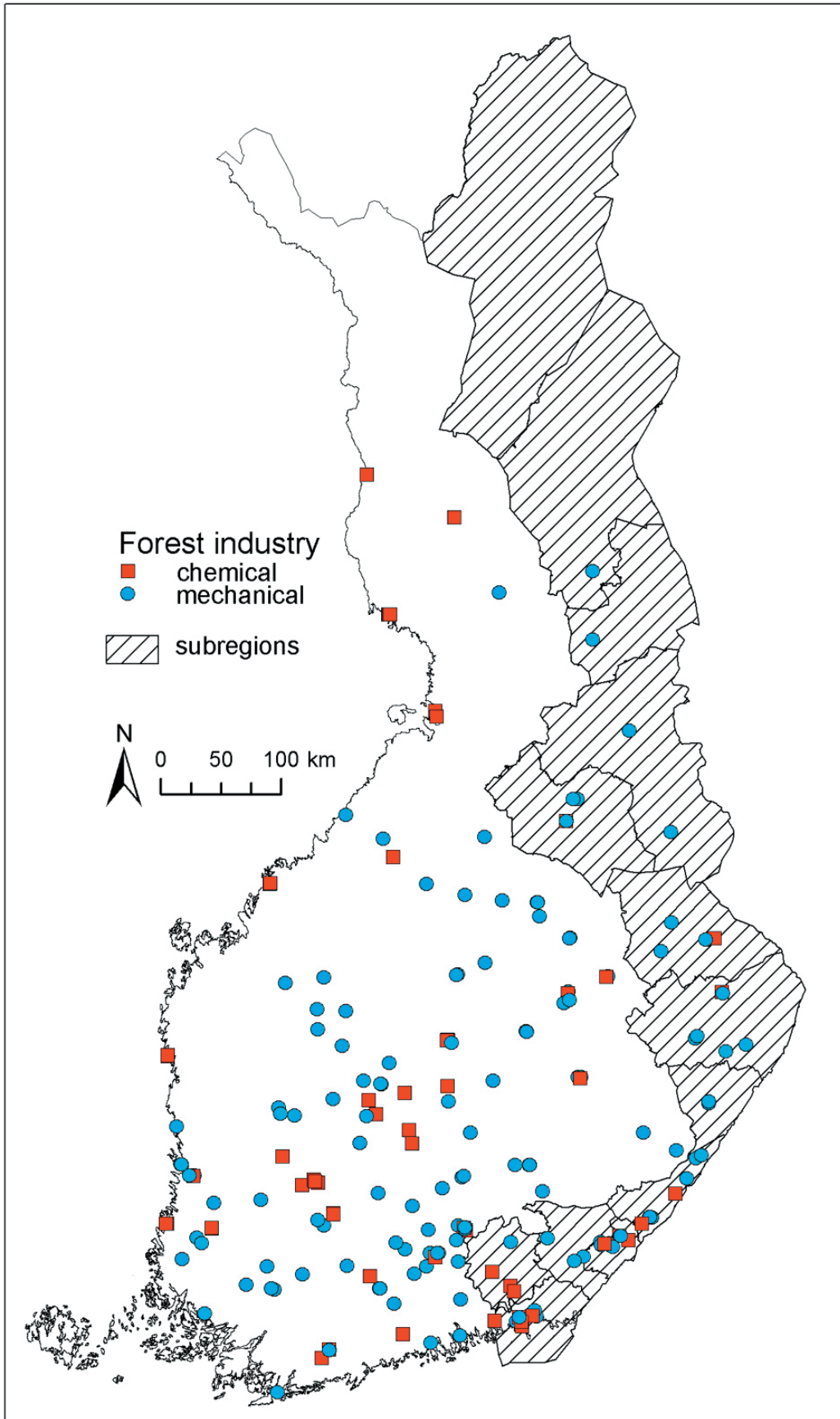


Fig. 2. Main wood processing industry units in Finland [Metsäteollisuus, 2008]. Hatched area denotes for the proposed Green Belt of Fennoscandia defined in terms of subregions (see also Fig. 3)

Key figures about sources of livelihood and nature protection concerning subregions of the Green Belt of Fennoscandia from the year 2005

Subregion		Industrial employees (%)	Service sector employees (%)	Agriculture and forestry employees (%)	Tourism sector employees (%)	Nature reserves ¹⁾ (ha x 1000)
Number ²⁾	name					
1	Northern Lapland	13,3	64,8	9,7	6,8	12065,9
2	Eastern Lapland	18,8	59,9	12,9	3,9	2177,7
3	Koillismaa	18,7	62,1	8,5	5,0	338,6
4	Kehys-Kainuu	20,5	57,5	13,7	3,3	263,4
5	Kajaani	21,7	66,3	5,5	2,8	142,7
6	Pielinen Karelia	25,5	53,6	13,2	3,6	114,3
7	Joensuu	26,8	62,4	5,0	2,8	110,6
8	Central Karelia	24,8	52,3	16,3	2,4	3,5
9	Imatra	34,1	55,0	5,1	3,5	0,2
10	Lappeenranta	27,6	63,2	2,4	3,9	0,0
11	Western Saimaa	23,9	58,4	12,1	2,9	0,0
12	Kouvola	30,2	60,0	4,7	2,9	11,1
13	Kotka-Hamina	26,4	64,7	3,2	3,5	24,6

¹⁾Nature reserves include only wilderness areas, national parks, strict nature reserves, mire reserves and old growth forests

²⁾Subregions are numbered from North to South (see also Fig. 1)

The correlation between nature protection and tourism is positive and strong ($r = 0,642$; $p < 0,001$), i.e., tourism is well developed in the regions where the area of nature reserves is high. The number of tourism personnel as related to the area of nature reserves gives a simple regression equation

$$\text{Tourism employees} = 250 + 0,002 * (\text{hectares of nature reserves} * 1000)$$

Thus, 100 000 ha of nature reserves creates only two jobs in tourism within the subregion. If employment is viewed only from this (simple) angle the number of employed people is very low and the efficiency to create jobs by nature protection is positive, but not effective.

Principal component analysis also sets nature reserves and tourism sector on the same main component (Fig. 3). This main component can be called «*nature tourism dimension*» as tourism is important in the subregions with high area of nature reserves. The main component scores for «*nature tourism dimension component*» seem to be, in general, higher in the GBF subregions compared with other parts of Finland, indicating good conditions for developing nature tourism. International border checkpoints were not a part of the present analysis, but their existence seems to increase tourism.

Tourism needs centres which provide customers to support also smaller and specialized businesses. The relative, economic importance of tourism seems to be greater in rural areas, but the number

of visitors is greater in centres. Visitors spread to surrounding areas from the main centres where connections by air, train or car are good (Fig. 4). For instance, in North Karelia the «visitor centre» is Joensuu, from where it is easy to continue to, e.g., Lieksa, Nurmes and Ilomantsi. Without good traffic connections development of tourism is very difficult.

Development of tourism is not self evident even in places with reasonable infrastructure. Cities are, in general, development and innovation centres and nodes of economic networks. These centres are needed also for rural development, as the development processes are interplay between centres and areas outside the centres. Joensuu with its remarkable concentration of forest and forestry expertise is the forest capital of GBF, but there are many other cities (e.g., Lappeenranta, Kuhmo, Kajaani, Kuusamo, Rovaniemi) which are very important for the future activities and development.

Suggested delineation of the Green Belt of Fennoscandia in Finland

The subregions at the eastern border differ from each other. This was expected according to the common South – North differences in Finland. Thus, the internal variations in the proposed GBF follow the South – North differences and urbanisation of Finland in general. Regional development in Finland is most vibrant in the southern – southwestern parts of the country: population, production and

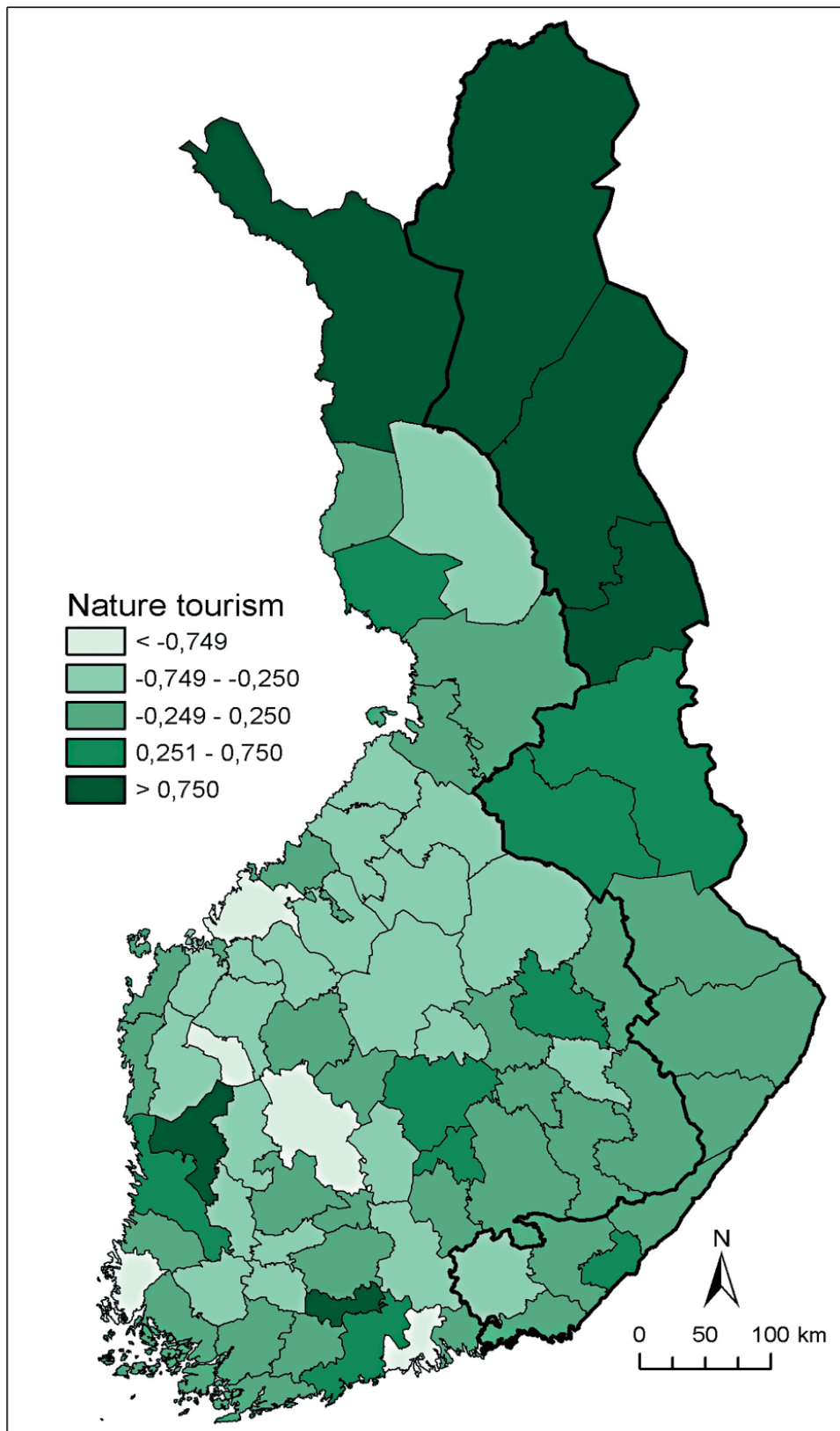


Fig. 3. Principal component analysis scores subregionwise for nature tourism component. Nature protection and tourism are important in subregions gaining high scores in the analysis. Thick line denotes the proposed [Makkonen, Hokkanen, 2006] delineation of the Green Belt of Fennoscandia. The included subregions from North to South are *North Lapland, East Lapland, Koillismaa, Kehys-Kainuu, Kajaani, Pielinen Karelia, Joensuu, Central Karelia, Imatra, Lappeenranta, Länsi-Saimaa, Kouvola, Kotka-Hamina*

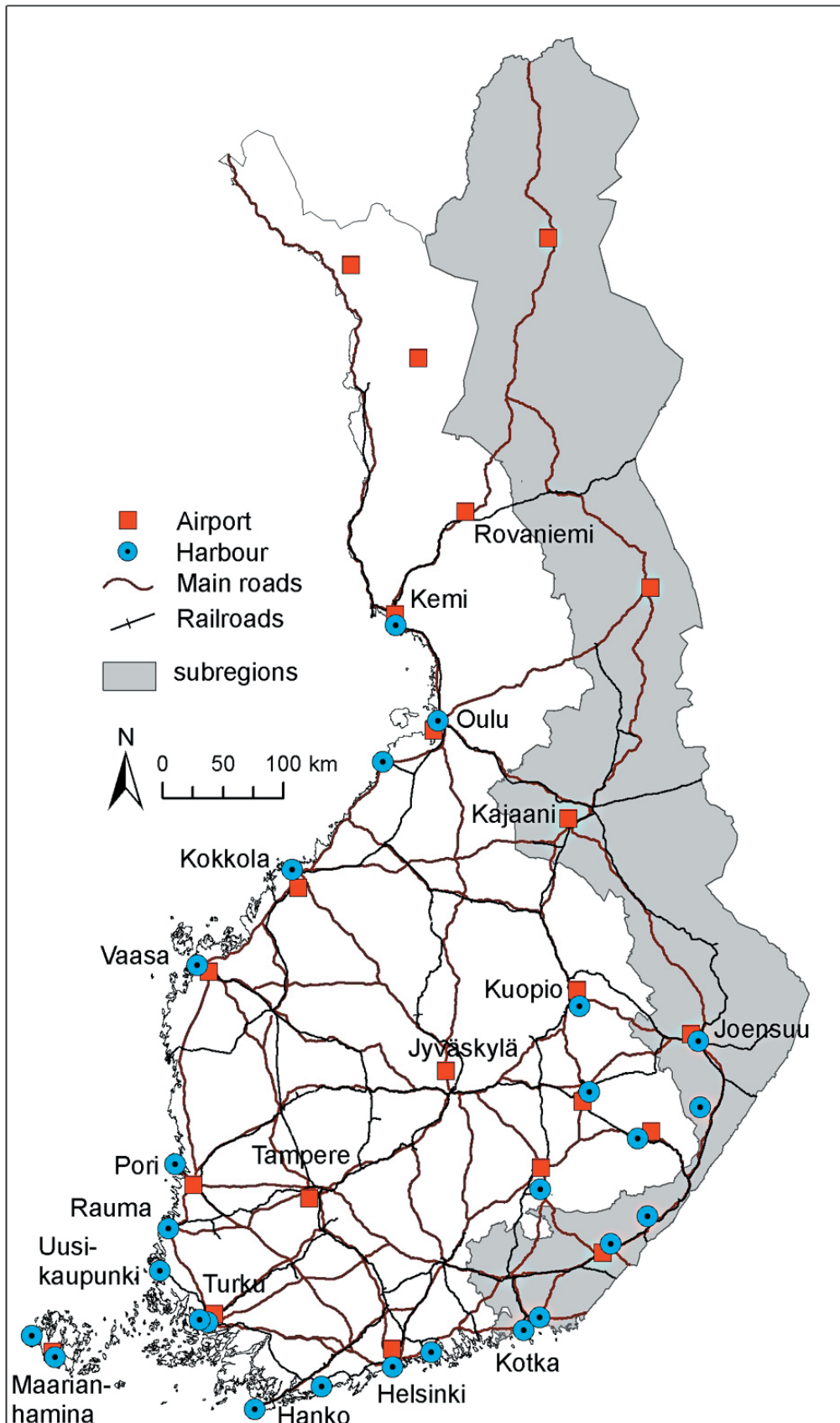


Fig. 4. Main roads, railroads, harbours and international airports. Grey area denotes the proposed Green Belt of Fennoscandia defined in terms of subregions (see also Fig. 3)

other prerequisites of development have been concentrated particularly into the greatest cities in southern and western Finland. Only a minor part of GBF is in the south-eastern part of Finland, but the role of forest industry is emphasized in these southern subregions of GBF. Also nature tourism is less important there.

Principal component analysis indicated that the best qualifications (e.g., nature values) for developing nature tourism are in the GBF area. Tourism already is an important source of livelihood there, and there are numerous nature reserves which can further be used for nature tourism. As the area is attached to the border, there are international border checkpoints which also increase the number of visitors.

The use of subregions as observation units appears to be well suited for studying regional development, but it also seems to be suitable for examining the characters of the Finnish area of GBF. As the Russian districts are even greater in size than Finnish subregions, the use of subregions instead of municipalities makes it easier to compare Finnish and Russian areas. It is, however, possible to use municipalities on Finnish side as observation units if specific study questions so require.

The suggested use of subregions in studying and delineating GBF seems to be well suited for the purpose, especially for the northern part of the area. GBF forms a fairly homogeneous ecological and economic «entity» characterized by nature and vicinity of the border being important also in the economy. The southern part of GBF falls a bit apart from the northern especially as to the nature values. The border is, without doubt, important for the subregions, but the nature is in totally different role in the regional economy characterized by industry, shopping tourism etc. However, keeping in mind the concept of GBF, the nature values can be introduced and built to be an important part of the economies of these areas also. GBF from the Gulf of Finland to the Arctic Ocean is an ideal and a concept. As GBF will not be ready soon, this approach gives grounds for «green» development along the border. Tourism is one option, but also new opportunities, e.g., in the field of ecosystem services are available. Mitigation of the effects of climate change requires extensive changes into our present nature use practices, and the value of good ecological state of the areas grows in importance. Also production of bioenergy offers opportunities to use forested areas a bit differently from the present practices. The ecological and economic uncertainties are clearly in favour of taking the concept of GBF as a tool into the developer's toolbox for building a bright future.

Conclusions

From the societal point of view it would be very noteworthy if tourism sector could maintain service structures and vitality of rural areas. The methods used in this study show that nature protection and tourism support each other: nature tourism business flourishes where there is either a large nature reserve or several small ones. Nature reserves are attractions which are obligatory for developing tourism and various tourism related services.

In rural areas tourism and nature tourism replace industrial activities, thus, in subregions where industry is a minor employer, the importance of tourism is emphasized. Nature protection and tourism seem to be able to maintain or assist in maintaining positive development, when other prerequisites for development are mainly missing. Positive influence of tourism on regional development can be seen and measured in incomes and jobs. Thus, the underused coalition of nature protection and tourism should be more widely considered and used as a tool in regional development.

Sustainable development combines ecological, economic, social and cultural sustainability. All these dimensions are in connection with each other, and genuine sustainability does not exist if any of these dimensions is missing. Local population and carrying capacity of the environments need to be taken into account in development decisions. It has been observed that the control of local population on the relevant decisions decreases in development of tourism and nature protection. Simultaneously, dissatisfaction with negative impacts of the decisions increases. Especially when developing tourism to nature reserves it is important to follow sustainable development principles in order to prevent tourism from destroying its vital attractions.

GBF is a concept and a tool for sustainable development. It manifests both principles and practices. The delineation of GBF can be, accordingly, done in several ways. The use of statistical units, subregions, has been shown to be one feasible way to delineate and define GBF. Subregions offer advantages: delineation includes the essential nature reserves but also cultural objects and all societal structures important for development. The delineation is also great enough to include real ecological entities. The use of GBF as a geographical object offers opportunities for wide national and international co-operation to advance the sustainable development approaches of societies taking into account ecology as an integral part of the development process.

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