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Importance of forest landscape quality for companies operating in nature tourism areas

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ABSTRACT

To promote the growth of nature based tourism in privately owned forest areas, new policy instruments, *e.g.* Payments for Ecosystem Services, are needed. They could engage private forest owners and nature-based tourism companies to cooperate and support the growth of the sector. We studied the entrepreneurs' attitudes towards the importance of environmental amenities and assessments of possible improvements in forest landscapes for their business in the framework of proposed Payments for Ecosystem Services mechanism, called Landscape and Recreation Value Trade. In the analyses, we compared the assessments of two groups of companies: core nature-based tourism companies that produce most services for tourists, and general service companies that produce services for both tourists and local people. We collected a data set from an online survey that was sent to representatives of the companies of the Ruka-Kuusamo region, Finland. Core nature-based tourism companies see forest landscape beauty as being more important for their business than do general service companies. In addition, we hypothesized in the questionnaire that the quality of landscape would improve so that the impacts of forest management practices, such as the traces of clear cuttings and intensive site preparation would be less visible in future than today. If the quality improves in the core area of tourism, the activity of the business of the 2 company groups will increase equally. If, however, the quality improves in a wider area, both the number of clients and revenues will increase more for nature-based tourism companies than for general service companies. Finally, related to the implementation of suggested Payments for Ecosystem Services, nature-based tourism companies had both more interest in collecting payments from tourists for a fund for landscape quality improvement and to make a private agreement with forest owners for improving landscape quality. For the policy makers of regions where nature tourism has potential, the following suggestions are given: As attractive landscape is identified as being an important factor for the nature-based tourism business, new types of mechanisms are needed to secure a good quality of this basic resource and the positive development of this sector. As the level of interest in participating in funding and agreements related to Payments for Ecosystem Services can be rather low among entrepreneurs, an incentive mechanism for companies should also be launched. In addition, a collaborative deliberation and communication process is needed for implementing the mechanism.

1. Introduction

Nature-based tourism (NBT) is an important and growing economic sector in different regions in Europe. In Finland, Norway and Sweden, growth potential for the tourism business is included in bioeconomy strategies (Finnish Bioeconomy Strategy, 2014; Sustainable Innovation, 2013; Swedish Research and Innovation Strategy, 2012), and this growth relies strongly on having an increased number of foreign visitors (*e.g.* Roadmap for tourism, 2015; Tyrväinen et al., 2017b). NBT companies are often small and they cooperate with other companies, resource users, and resource owners, *i.e.* landowners. NBT entrepreneurs, however, face different socio-political contexts, protection regimes and ownership statuses in different regions and countries (Bell et al., 2008; Fredman and Tyrväinen, 2010). Some of the entrepreneurs use mainly public lands for their services, but in some regions the businesses are based largely on the utilization of privately owned forests.

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NBT builds on attractive nature and nature experiences and activities, and therefore, is highly dependent on the quality of the natural environment (Tyrväinen et al., 2008, 2017a; Margaryan, 2018). In the Nordic countries, free access to all nature areas (everyman's right) is an important asset (Kaltenborn, et al., 2001; Sandell and Fredman, 2010), and therefore, private forests deliver an important part of amenity services of forests. In regions with intensive wood production, short rotation cycles and large size management units are common management practices. These may negatively affect landscape quality and thus decrease the suitability of forests for tourism.

Nature-based tourists typically look for beautiful, natural looking, authentic natural environments and nature experiences (Tyrväinen et al., 2001; Uusitalo, 2017). The forest preference studies conclude that people appreciate mature forests that have good visibility, some undergrowth, and a green field layer with no strong visible signs of forest management (*e.g.* Ribe, 2009; Gundersen and Frivold, 2008; Tyrväinen et al., 2017a; Silvennoinen, 2017). In contrast, the large regeneration cutting areas and traces of cutting, soil preparation, and logging residues reduce the recreational quality of forests. As a consequence, adapted landscape management methods are called for in areas that are in active recreational or tourism use, in particular, along trails and paths and near other tourism services and structures (*e.g.* Juutinen et al., 2014, 2017).

Non-marketed amenity benefits of forests can, however, be economically significant. In fact, visitors are willing to pay for an enhanced supply of forest amenities in tourism areas, and in particular, for enhanced landscape and biodiversity values (Tyrväinen et al., 2014). In privately owned forests, economic incentives for landowners to produce landscape and recreation values are, however, lacking. Therefore, the provision of these values is not adequately taken into account in forest management. Consequently, new funding instruments that support the provision of amenity benefits in private lands, including compensation mechanisms bringing income to landowners, have gained attention in recent studies (*e.g.* Tyrväinen et al., 2014; Thorsen et al., 2014; Mäntymaa et al., 2018).

In Finland, a Payments for Ecosystem Services (PES) system called Landscape and Recreation Value Trade (LRVT) has been proposed in which forest owners would be compensated for voluntarily enhancing the provision of landscape and recreational values in their own forests (Tyrväinen et al., 2014; Tikkanen et al., 2017). Finances for the mechanism have been suggested to be collected for a landscape management fund from the visitors and/or tourism entrepreneurs using the area. A possible way of funding the mechanism could be, for example, NBT companies collecting a small environmental fee, *e.g.* 1–2 euro per night, per person, for a specific fund for the implementation of LRVT. The funding may also be gathered from a combination of actors and sources, both from public and private sectors in a way that works best locally (*e.g.* Smith et al., 2013).

NBT business is typically run by SME companies consisting of only one or a few employees. Their core business consists of accommodation and restaurant or other food services, program services in nature, equipment rental, and transport. Moreover, nature-based tourism companies often have specialized to specific services, such as white-water rafting, bird-watching, hiking, or accommodation and food services. The small size of entrepreneurship may limit the financial possibilities available for engaging in new type of activities, although their attitudes toward environmental protection may positive. Establishing a solid funding basis is one of the key challenges for launching a new market-based mechanism for ecosystem services, and therefore, investigating the willingness to participate in funding and promoting the mechanism of a wide range of actors in the service sector is needed (Smith et al., 2013; Thorsen et al., 2014).

The characteristics and attitudes of NBT companies, as well as their business activities and performance, have been studied to some extent (Lundberg and Fredman, 2012; Petäjistö and Selby, 2014; Lundmark and Muller, 2010; Stensland et al., 2014; Margaryan and Fredman, 2017). Although the number of quantitative studies in nature-based tourism is still limited, research regarding tourism entrepreneurship has been conducted mainly from two perspectives. The first type of study, *e.g.* Nybakk and Hansen (2008) and Hallak et al. (2012), has analyzed how entrepreneurs' characteristics, experiences, and entrepreneurial attitudes affect the management and performance of NBT companies. Other studies have explored the relationship between the characteristics of enterprises and the business development, such as the growth of a company. The characteristics of enterprises have included the provision of a service bundle or a single service (*e.g.*, Akbaba, 2012) or the size of an enterprise (*e.g.*, Sundbo et al., 2007), for example. In addition, Lerner and Haber (2001) have analyzed the relationship between the level of attractiveness of a tourism company's location and the business performance of the company. They found that an attractive environment, natural or constructed, increased the revenues of companies but not their profitability.

As far as we know, the role of forests for NBT companies has not been studied empirically so far. In addition, research regarding NBT companies' interest in and willingness to commit to the implementation of a PES mechanism, targeted to enhance forest landscape quality in their business environment, is missing. This study sheds light on these topics. Moreover, in a tourism region, other businesses, such as groceries, gas stations, and other local retail shops and services, usually also benefit, to some extent, from tourism. This study also analyses the topics from the perspective of these companies.

This study investigates entrepreneurs' attitudes toward the importance of environmental amenities and assesses possible improvements in forest landscapes for the present and future business activities of NBT and other service companies in the framework of proposed PES mechanism, LRVT. Using a data set of the entrepreneurs or business executives of the companies of the Ruka-Kuusamo tourism resort, we analyze the following research questions: 1. How do the respondents assess the present quality of environmental amenities and recreation facilities of the area? 2. If the quality of forest landscape around the resort would improve considerably, how much would this increase the business activity, in general and in terms of revenues or the number of customers? 3. As companies making business related to NBT should be an important part in the implementation of LRVT, how acceptable to the respondents are the related duties they possibly face after starting the implementation? Are entrepreneurs or business executives, for example, interested in co-operating with the organization of the proposed PES as the collectors of payments from customers, or are the companies interested in paying a monetary contribution to the implementation of landscape improvements? These questions are important, as NBT companies should play a key role in the implementation of LRVT, acting as mediators between the producers (forest owners) and consumers (visitors) of environmental amenities. The questions are mostly analyzed with respect to the division of the companies into two classes: first, companies that produce most of the services to tourists (hereafter NBTs) and second, companies that produce services to both tourists and local people (general service or GSs).

2. Study area, materials and methods

2.1. Study area: the Ruka-Kuusamo tourism area

Kuusamo is a town and municipality in north-eastern Finland in an area rich with hills and fells. The population density is low (3.2 inhabitants per square km), with 70% living in the town center and the rest in a sparsely populated rural area. Of employed people, about two-thirds work in services such as tourism, one-sixth in processing industries and about 10% in agriculture, forestry, and reindeer husbandry. As much as 84% of the municipality's total land area is forested, and 82% of the forest is in non-industrial private ownership (National Forest Inventory 9, 2016).

Tourism has a significant role in the region's economy. One of the

largest ski resorts in Finland, Ruka, is situated in Kuusamo. Annually, around one million tourists visit Kuusamo, leaving a total revenue of over 90 million euros and providing full-time employment to over 800 people. The annual number of registered overnight stays in hotels of over 20 beds (excluding stays in owned or rental cottages) is 490,000. About 23% of visitors staying overnight are international tourists. The key tourism activities include down-hill and cross-country skiing, snowshoeing, snowmobiling, and husky safaris, as well as hiking, cycling, canoeing, and the observation of birds and other boreal species. The current accommodation capacity is 12,000 beds, including hotel rooms and holiday homes, and 6900 holiday apartments and cottages (Facts about Ruka and Kuusamo, 2018). The area's strategic goals for developing the tourism sector include increased all-year-round tourism, increased international tourism, and the increased occupancy rate of accommodation sites. This is why the quality of forest landscape in summer time also becomes significant.

2.2. Questionnaire

The questionnaire survey (see Appendix) included four sections. The first section asked about the background information of a respondent, and the second asked about the basic information of companies, such as the branch, the recent development of revenues, and the number of customers. The third section sought to find out respondents' assessments of the importance of environmental amenities and natural environment for companies' business, including the pairwise comparisons commonly used in the analytic hierarchy process (Saaty, 1980). The fourth section described briefly the details of the proposed LRVT and inquired how improvements in forest landscape quality would change the volume of companies' business.

In the third section, biodiversity, the beauty of the landscape, and the quality of water in natural water systems were the three environmental amenities that were included in the valuation part of the survey. These have been identified to be the most important amenities in the study area in earlier studies (Kauppila, 2014; Tyrväinen et al., 2014). In pairwise comparisons of this study, the three amenities were prioritized by verbal scale from equal importance to absolute importance of one element over another by using the scale from Saaty (1980) and allowing also intermediate values to be used. The pairwise comparisons enable us to derive the priorities of the evaluated factors in ratio scale. The advantage of a pairwise comparison in this study was that instead of using the Likert scale or holistic rating of evaluated factors, the respondents were asked to concentrate on comparing only two amenities at a time. As the pairwise comparisons were made only at one decision hierarchy level, the potential disadvantages related to the use of the technique, such as rank reversal (*e.g.* Harker and Vargas, 1987; Leskinen and Kangas, 2005), were avoided.

In the calculation of the results, the verbal comparisons were translated into numerical values according to the preference intensity as follows: 1/1, 3/1, 5/1, 7/1, and 9/1, where 1/1 indicates equal importance and 9/1 indicates extreme importance and numerically that the first item is nine times more important as the second one, for example. In addition, if the respondent hesitates between the values, also intermediate values 2/1, 4/1, 6/1, and 8/1 were available. For calculating the priorities for the three amenities, a regression estimation technique presented in Alho et al. (2001) was used. The calculations were made separately for each respondent by using STEPS software (Haara and Leskinen, 2007). The results are presented as averages for all respondents and two groups (NBTs and GSs), which means that each respondent within the group has equal weight in the analysis. The benefit of a regression based method is that it gives a statistically sound evaluation concerning the consistency of the pairwise comparisons of each respondent. In addition to the average figures of all respondents, we estimated the coefficient of determination (R^2) of the regression model for each respondent and used them as a measure of consistency of pairwise comparisons. The results are presented for all respondents, but the difference of these results to the results from which a quartile of most inconsistent pairwise comparisons was excluded (corresponding with respondent's models' having $R^2 \geq 0.5$).

In the fourth section, a method similar to a contingent behavior approach (Alberini and Longo, 2006; Rosenberger and Loomis, 1999) was developed to elaborate how the companies expecting a change in the quality of forest landscape may affect the number of their customers and associated tourism revenues. The revealed monetary amount of the foreseen marginal revenues can be seen as the estimate of the value of an improvement in landscape quality. In addition, we asked about companies' willingness to pay (WTP) for monetary compensation for improvements in landscape quality in commercial forests that are important for the business of the companies within LRVT. This quasi-WTP is not a real demand side WTP, as the demand for the landscape originates from the visitors of the region.

2.3. Survey sample and data collection

The data set from companies in the Ruka-Kuusamo area was collected through a web-based survey. The overall sample was compiled from two sources. First, we co-operated with the Ruka-Kuusamo Tourist Association, which has 120 members among local tourism companies and entrepreneurs. As we beforehand knew that the population of potential respondents was small, we invited all member companies of Ruka-Kuusamo Tourist Association to participate to the survey. The office of the association included our invitation letter along with an internet link to the survey in their newsletter and sent it two times to its members in December 2016. From this source we got 12 responses.

In order to supplement the sample, especially with GSs, we used a second source. We picked up the group of relevant companies, altogether 93, producing both tourism and other services, from the online company register produced and maintained by a regional business center Naturpolis Oy (Naturpolis, 2017). In addition to tourism companies, the sample included supermarkets, special shops, and service stations, as well as companies producing personal services, such as wellness services. We contacted these companies either with face-to-face visits or phone calls. Despite the way of contact, all companies were offered an opportunity to join the study by answering the survey online. From this group of the companies, we got 32 responses, totaling together up to 44 responses with the previous answers. Comparing this to the sum of the two subsamples (120 + 93) the response rate is 20.7%. The subsamples overlap, and therefore, the real response rate is higher. The low absolute number of responses, however, restricts the variety of statistical methods that could be used in the analyses of the data set. In addition, the small number of observations needs to be taken into account when interpreting the results.

2.4. Background information about respondents' companies

The largest group of companies who responded to the survey produce accommodation and food service activities (17 companies or 38.6%), the second retail trade services (10 or 22.7%) and the third services related to skiing center activities, including renting of skiing equipment (9 or 20.5%) (Table 1)[1] . Companies producing accommodation and food service activities, services of skiing center, and tourism program services, including safaris, fishing and hunting trips, altogether (31 or 70.5%) can be classified as NBTs because they sell services mostly to visitors of the tourism resort. The rest of the companies (13 or 29.5%), *i.e.* retailers and companies producing "other services" (in Table 1), are GSs that sell services to both visitors and local people, being less dependent on tourism than the former group.

[1] The classification into the business branches is based on the most important service of a company measured with turnover as many of the companies produce several kinds of services.

Table 1
Descriptive statistics of the companies that participated in the survey.

	NBTs		GSs		All	
	n	%	n	%	n	%
Branch of business						
Accommodation, food service activities	17	54.8			17	38.6
Tourism program services, safaris, fishing and hunting trips	9	29.0			9	20.5
Services of skiing center, rental of skiing equipment	5	16.1			5	11.4
Retail trade			10	6.97	10	22.7
Other services			3	23.1	3	6.8
All	31	100	13	100	44	100
Age of company (years)						
0–9	7	22.6	0	0.0	7	15.9
10–19	8	25.8	8	61.5	16	36.4
20–39	9	29.0	0	0.0	9	20.5
40 or more	7	22.6	5	38.5	12	27.3
All	31	100	13	100	44	100
Main season of business						
Winter	8	25.8	1	7.7	9	20.5
Summer	3	9.7	1	7.7	4	9.1
Year-round	20	64.5	11	84.6	31	70.5
All	31	100	13	100	44	100
Development of revenues in recent 5 years						
Decreased	4	13.3	2	15.4	6	14.0
Unchanged as before	13	43.3	2	15.4	15	34.9
Increased	13	43.3	9	69.2	22	51.2
All	30	100	13	100	43	100
Expectations of the development of business in coming 5 years						
Business ends	2	6.5	0	0.0	2	4.5
Decreases	0	0.0	0	0.0	0	0.0
Unchanged as before	10	32.3	6	46.2	16	36.4
Increases	19	61.3	7	53.8	26	59.1
All	31	100	13	100	44	100
Expected annual growth of business in coming 5 years						
Growth of clients	13	15.6	6	8.3	19	13.3
Growth of revenues	17	17.1	4	8.8	21	15.5
Number of clients in recent 12 months						
0–499	6	27.3	2	16.7	8	23.5
500–4,999	9	40.9	4	33.3	13	38.2
5000–49,999	5	22.7	2	16.7	7	20.6
More than 50,000	2	9.1	4	33.3	6	17.6
All	22	100	12	100	34	100
Share of international clients	29	27.8	13	6.6	42	21.8

The mean age of the companies surveyed is 26.6 years. Grouping the companies into age classes shows that the sample includes both young and older companies, with the largest group being 10–19 years old (16 or 37.2%). Comparing NBTs and GSs, the distribution of the age of the former group is quite stable, between 22 and 29%, whereas the distribution of the latter is more uneven. Although Ruka-Kuusamo is mainly a winter sport resort, most of the companies (31 or 70.5%) do their business all year-round, whereas 20.5% (9) do it in winter and 9.1% (4) in the summer (*i.e.*, in snowless time) only. The result is a bit different if we look at the two types of the companies. For 25.8% of NBTs, the main season of business is winter, and 64.5% do business all year-round, whereas the comparable figures for GSs are 7.7 and 84.6%. In conclusion, most companies produce several kinds of services, finding customers in all seasons.

Related to the development of business in the most recent 5 years, most of the companies (22 or 51.2%) reported increased revenues, whereas only 6 (14.0%) reported decreased ones. The former share is larger among GSs, of which 69.2% (9) claimed increased revenues. These figures reflect the increased development of tourism in the region in general. Regarding the expectations of the development of business in the coming 5 years, the companies are optimistic, since 59.1% (26) predict growth, whereas only 4.5% (2) predict the ending of their business and none predict the decrease of business. NBTs are more optimistic, as 61.3% (13) foresee growth, whereas only 53.8% (7) of GSs do the same. In a follow-up question, the respondents who expected growth of business express similar optimism: on average they predict a 13.3% annual increase of clients (19) and 15.5% annual increase of revenues (21) in the coming 5 years. For NBTs, the respective figures are a bit higher (13 or 15.6% and 17 or 17.1%), whereas for GSs they are 8.3% (6) and 8.8% (4), respectively.

We also classified the companies by the number of clients in the recent 12 months, which shows the large variation of the companies. This means that the companies simply differ in their size with some of them being only part-time small businesses, for example, but also partly that they differ in the branch of business (holiday home constructor *vs.* supermarket). The share of larger companies is bigger among GSs than NBTs. Moreover, the reported share of the international clients (21.2%) of the companies of our sample is almost the same as the international overnighters of the Kuusamo tourism resort as a whole (23.4% in 2014, Facts about Ruka and Kuusamo, 2018) indicating that, although being limited, our sample represents the diversity of companies in the region. NBTs have much higher share of international clients (27.8%) than GSs (6.6%).

As there are no statistics or other studies available about the structure of companies in the Ruka-Kuusamo area, the assessment of representativeness of the data set is difficult. However, there are two surveys from NBTs: Petäjistö and Shelby (2012) made a survey to Finnish NBTs, and Kosenius et al. (2013) made a survey to NBTs operating in Lapland, which is a neighboring region of the Ruka-Kuusamo area. The comparison of the characteristics of companies between these studies shows that the NBTs of our study (GS are not included in this analysis) are on average older (24 year) than the ones by Petäjistö and Shelby (2012) (17 years) and Kosenius et al. (2013) (17 years). With respect to the number of customers, our NBTs are larger (mean 43,100, median 3000) than those of Petäjistö and Shelby (2012) (6,800, 400) and Kosenius et al. (2013) (3000; 730). The same tendency can be found related to revenues. In our study, 42% of NBTs have an annual revenue of less than 100,000 euros, with 28% between 100,000 and 499,999 euros and 31% at 500,000 or more; the respective figures by Petäjistö and Shelby (2012) are 70, 19, and 11% and for Kosenius et al. (2013), 48, 30, and 22%. In other words, the respondents of our study represent, on the average, larger and older companies than the NBTs in the whole of Finland and Lapland.

3. Results

3.1. Companies' opinions on environmental amenities and recreation facilities

The respondents are mostly very satisfied with the overall quality of the environmental amenities and recreation facilities for tourism in the Ruka-Kuusamo area; this was assessed with a five point scale from "very good" to "very bad" (Fig. 1). Considering the percentage figures of the two highest classes of the scale ("very good", "good") that were added up to simplify and ease the illustration, all except for one of the assessments received a figure larger or equal to 50%, with the two largest being landscape beauty and the quality of national parks (43 or 100% and 97.7%, respectively). Compared to the high level of satisfaction in general, the figure of the quality of commercial forests for tourism (28 or 65.1%) could be better, as most of the nature tourism companies are doing their business in the middle of privately owned commercially managed forests. The companies were least happy with the maintenance of recreation facilities, *i.e.* resting places along the hiking or skiing routes (19 or 46.3%). There were no statistical differences between the answers of NBTs and GSs.

Using the pairwise comparisons of analytic hierarchy process (Saaty, 1980), we asked the respondents to compare the importance of three regional environmental benefits, *i.e.* natural biodiversity, the quality of water in the natural water systems, and the beauty of the

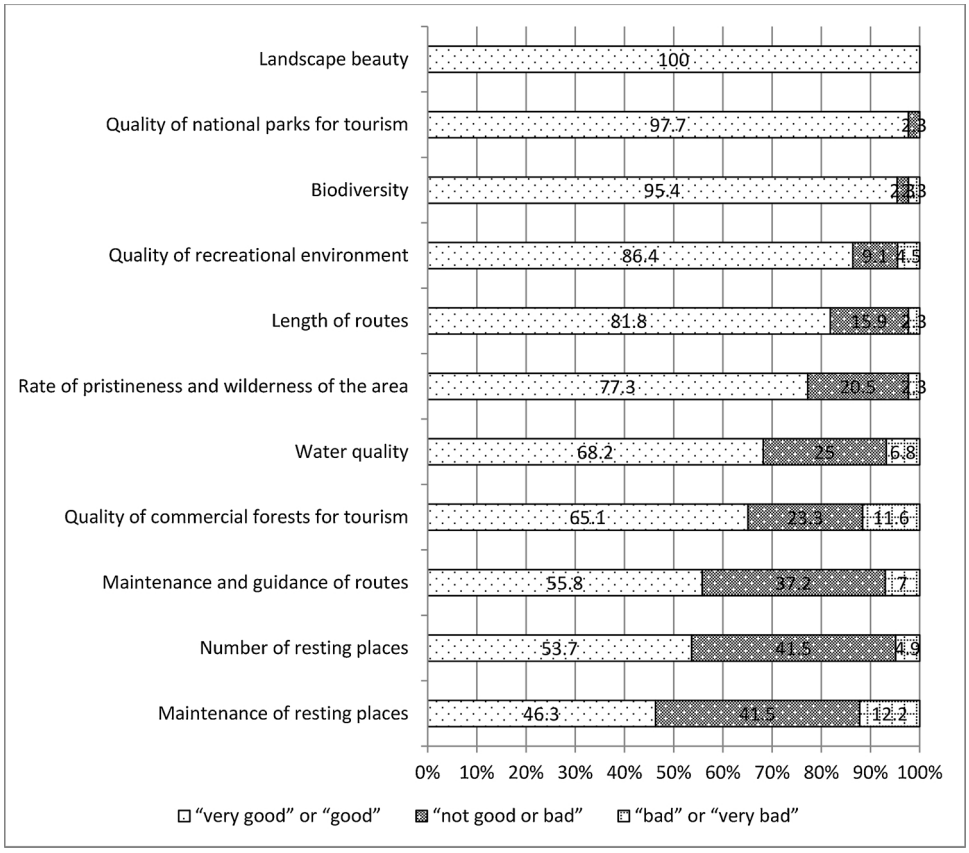

Fig. 1. Respondents' opinions of the quality of environmental and recreational services in the Ruka-Kuusamo area.

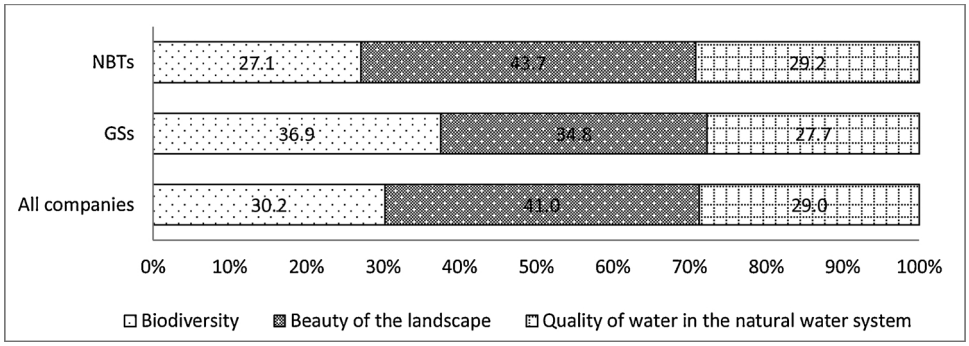

Fig. 2. The importance of biodiversity, the quality of water, and the beauty of landscape assessed with the pairwise comparisons of analytic hierarchy process.

landscape, from the perspective of company business. The results of the comparison by all companies were that the beauty of landscape got the largest weight of 41.0%, with biodiversity getting 30.2% and the quality of water 29.0% (Fig. 2)[2]. Related to the beauty of landscape, NBTs see this amenity as the most important one (weight 43.7%). For GSs the weights of biodiversity and landscape do not differ so much (36.9 and 34.8%).

Regarding the importance of different environments for business assessed with a five point scale from "extremely important" to "not at all important", the majority of the companies (61.4%) assessed that national parks are either "extremely important" or "very important" for their business (Fig. 3). Other protected areas and commercial forests are important for an almost equal part (39.0% and 41.0%, respectively) of the companies. We found no statistical differences between the assessments of the NBTs and the GSs.

NBTs see landscapes in all site types mentioned in the survey as more important for their business than GSs (Fig. 4). The difference is, however, statistically significant between NBTs and GSs only in relation to the first two types of landscapes, *i.e.* "sites in the nearby area of the company within about a one kilometer radius" and "a small site where a company arranges nature activities" (Pearson chi-square, 2-sided asymptotic significance 0.044 and 0.015, respectively). The three most important landscapes for NBTs are "sites in the nearby area of the company within about a one kilometer radius", "sites along hiking and skiing routes" and "landscapes of Ruka-Kuusamo in general".

3.2. Effects of the quality improvement of landscape on the success of tourism business

Using a five point scale, 70.0% of the respondents evaluated that enhanced landscape quality would be extremely or very beneficial for

[2] After the removal of 13 inconsistent observations (3 from NBTs, 10 from GSs), *i.e.* respondents with regression models having $R^2 < 0.5$, the results mostly remain the same.

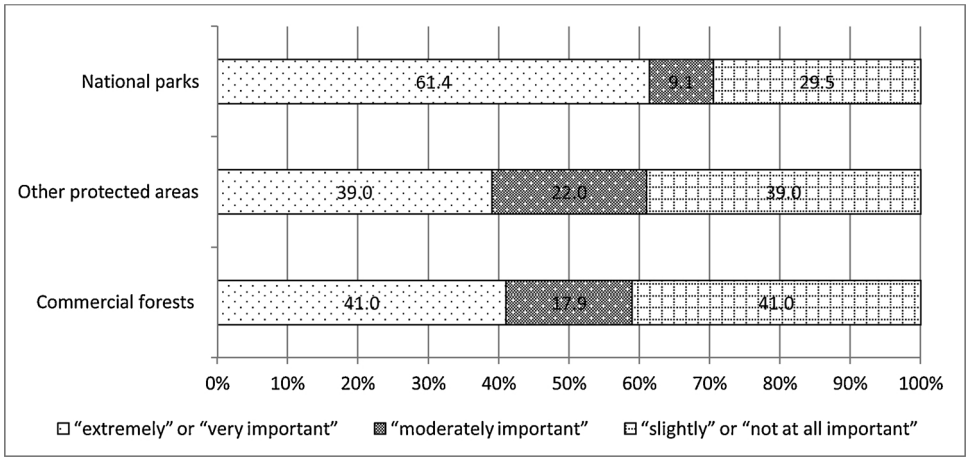

Fig. 3. Importance of different environments for the business of companies.

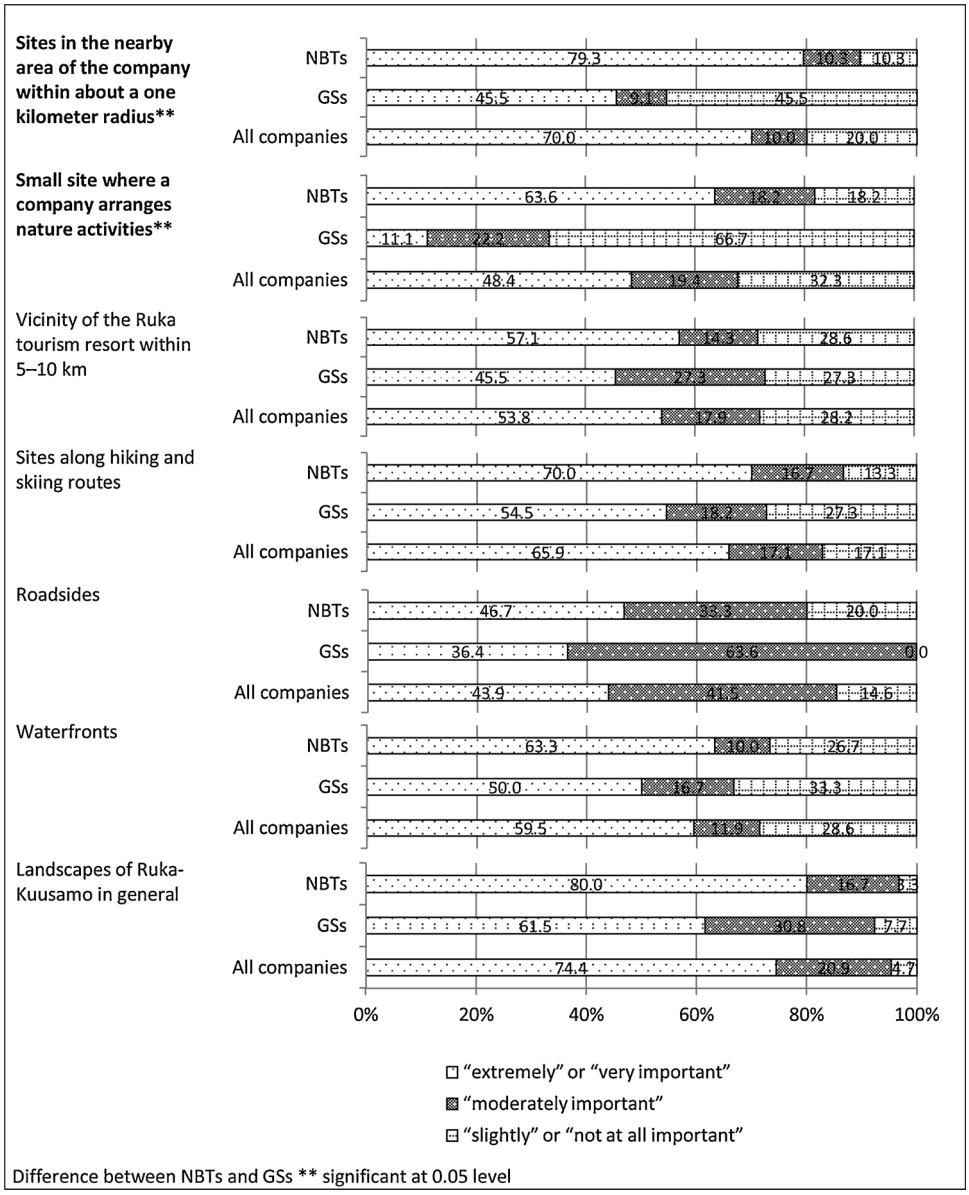

Fig. 4. Landscapes in different sites important for the business of companies.

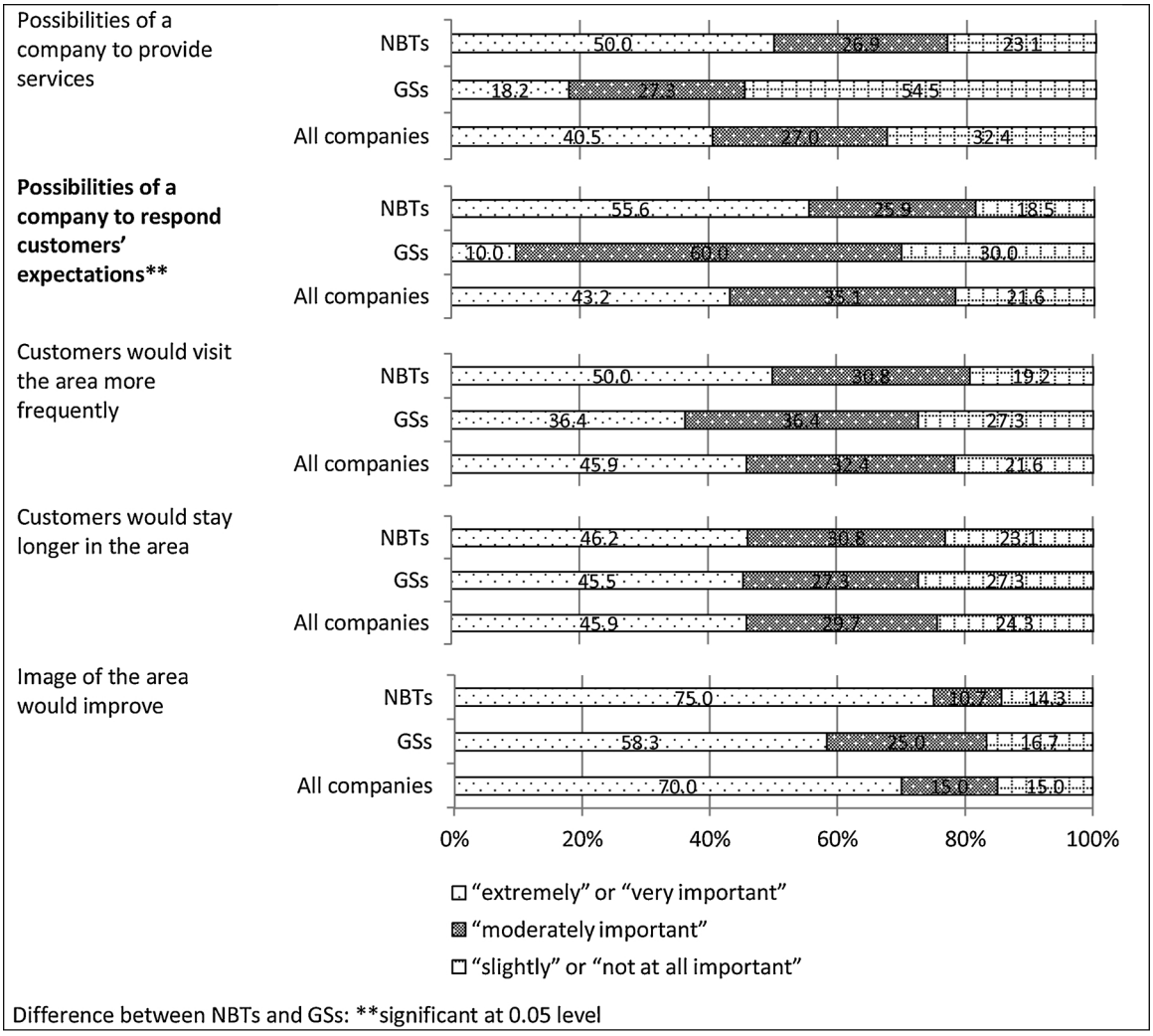

Fig. 5. Branches of business and benefits that companies expect to get from improved management practices of commercial forest.

the overall image of the area (Fig. 5). About the equal share of all companies (40–46%) assessed that it would be extremely or very beneficial for companies' possibilities to provide services or to respond to customers' expectations or that customers would visit the area more frequently or stay longer in the area. With respect to the second statement in Fig. 5 ("possibilities of a company to respond customers' expectations"), NBTs found the improvement statistically more beneficial than GSs (Pearson chi-square, 2-sided asymptotic significance 0.035).

In the survey questionnaire, respondents were asked to consider a scenario where LRVT would be in operation in the area. Accordingly, the quality of landscape would be increased by forest management practices implemented against compensation by forest owners, especially along outdoor trails and paths and roads and waterfronts, as well as in the vicinity of resting places of the trails. In result, the negative impacts of forest management practices, such as the visual traces of clear cuttings and intensive site preparation, would be much less often visible than today. The effect of the quality improvement of landscape on the success of future tourism business was investigated with two spatial options; first, the improvement in landscape quality was assumed to occur in the core area (about 220 km^2) (marked with yellow in Fig. 6a) and second, it was assumed to occur in the wider area (about 1460 km^2) of tourism business (Fig. 6b). The respondents were asked to assess how the improvement in landscape quality would affect the growth of the number of clients and/or revenues in these two options. Thus, we got from one company either the first, the second, or the both of the figures. More often, however, the answer was the growth of the number of clients. In order to supplement the data set to include both figures for each of the respondents, we assumed that the growth of clients is equal to the growth of revenues of those respondents who only reported one of these two figures. This assumption was supported by the fact that the figures for growth of clients and growth of revenues were not statistically different for respondents who reported both figures. The supplementation increases the number of observations from 32 to 34 in the variable "growth of clients" and from 27 to 34 in the variable "growth of revenues". The means of the supplemented variables are a bit higher than the original ones while still being very close.

In the responses, the companies estimated that the improvement of landscape quality in the core area would annually increase the number of clients on average 4.3% and in the wider area 6.0% (Table 2). The difference between these figures is statistically significant (paired samples *t*-test: $t = 2.890$, $df. = 33$, and $p = 0.007$). The comparable figures for increase of revenues are 4.5 and 6.0% per year, again with a statistically significant difference ($t = 2.810$, $df. = 33$, and $p = 0.008$). These results suggest that improving the quality of landscape in the core area would substantially increase companies' business opportunities, and the expansion of the area would do it even more.

If we compare the assessments between the two groups of companies, the NBTs estimated that the annual mean growth of clients is 4.9% with a landscape quality increase in the core area, whereas for the GSs

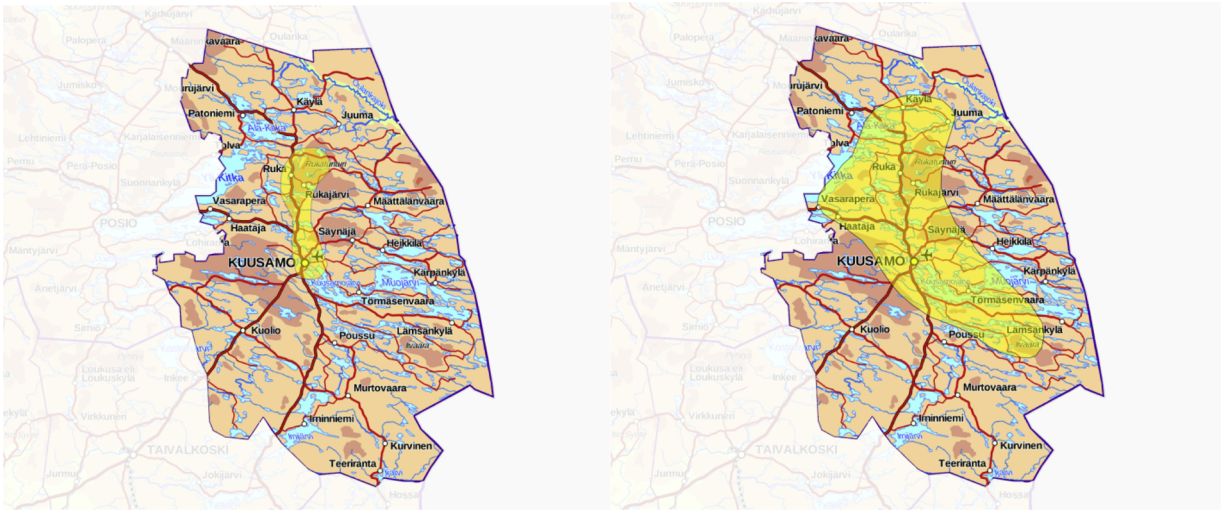

Fig. 6. Core area (a) and wider area (b) in the scenario where the improvement in landscape quality would occur due to the implementation of LRVT.

Table 2
Increase of number of clients and revenues that companies expect to get from the improved quality of landscape with two spatial scenarios.

Spatial scenario	Increase of				n
	number of clients		revenues		
	%	Std. dev.	%	Std. dev.	
Core area					
NBTs	4.9	5.982	5.4	6.253	23
GSs	3.1	2.982	2.7	2.970	11
All	4.3	5.226	4.5	5.505	34
Statistical difference between company groups					
t	0.961		1.671		
df.	32		32		
p	0.344		0.105		
Wider area					
NBTs	7.1	7.547	7.3	7.488	24
GSs	3.3	2.970	2.8	2.926	11
All	6.0	6.677	6.0	6.718	35
Statistical difference between company groups					
t	2.127		2.523		
df.	33		33		
p	0.041		0.017		

it was only 3.1%, with the difference, however, not being statistically significant (independent samples *t*-test $t = 0.961$, df. = 32, and $p = 0.344$, with equal variances assumed). The difference of revenues between the company groups is very near to the limit of statistical significance ($t = 1.671$, df. = 32, and $p = 0.105$, with equal variances not assumed), as the corresponding percentages are 5.4% and 2.7%.

On the other hand, with a quality increase in the wider area, the difference of both the number of clients and revenues between the two company types are statistically significant (clients: $t = 2.127$, df. = 33, and $p = 0.041$, with equal variances not assumed; revenues: $t = 2.523$, df. = 33, and $p = 0.017$, with equal variances not assumed), as the annual growth of clients was assessed, on average, at 7.1% and the growth of revenues at 7.3% by the NBTs and 3.3% and 2.8% by the GSs, respectively. The results suggest that the NBTs expect an additional increase in business activities if the area of the landscape quality increase would be expanded from the core area to the wider area, whereas the expectations of the GSs stay about the same.

If we multiply the current business revenues revealed from the companies[3] with the average figures of the percentage growth (core area 4.5%, wider area 6.0%), the total turnover summed up over the responded companies would annually increase by 4.67 and 5.09 million euros, respectively. Then we can estimate the corresponding company based averages by dividing the total increase by the number of companies, and we get 0.14 and 0.15 million euros. This means that the revenues increase statistically more if the landscape quality increases in the wider area instead of the core area only (paired samples *t*-test $t = 1.777$, df. = 33, and $p = 0.085$). When multiplied by the assessed number of the population of all the tourism-related companies in the region (100–150), the total annual increase of revenues is about 13.7–15.0 million euros, owing to the increase of landscape quality in the core area and 20.6–22.5 million euros in the wider area. These monetary amounts can be seen as a rough monetary measure of maximum profitable investment in the landscape quality improvements in the study area.

If we make the increase of revenues proportional to the acreage of improved landscape quality, we are able to calculate the marginal revenues or marginal utilities of landscape improvements. Recalling that the acreage of the core area is 220 km^2 and the wider area 1460 km^2, the marginal annual revenue of the improved landscape in the former varies from 622 to 682 euros per hectare and in latter from 141 to 154 euros per hectare.

3.3. Opinions and willingness to pay for the organizing of LRTV

According to the respondents, the most popular ways to collect money from visitors to a landscape management fund is a small payment included into accommodation services (53.6%) and the charge for the use of hiking and skiing routes (42.9%) (Fig. 7). There was no statistical difference between the assessments of the NBTs and the GSs.

Using a five point scale from “extremely interested” (value 5) to “not at all interested” (1), the respondents were asked about their interest in three things. The first one was if their company would be interested in taking part in the collection of payments from customers in the price of sold products and services for the forest management fund.

[3] In the survey, we asked the order of magnitude of companies’ revenue using a classified scale from “less than 20’000 €” to “1 million € or more, how much?” In the calculation, we used the midpoints of the classes, except in the last class where we used exact figures given by respondents.

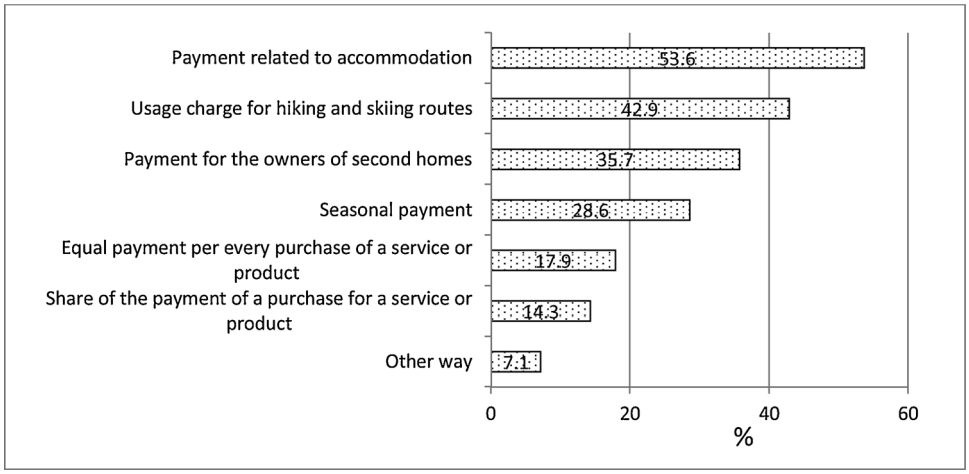

Fig. 7. The best way of collecting money from visitors to a landscape management fund in the Ruka-Kuusamo area (n = 28).

Table 3
Companies' mean interest in alternative financing models and making agreements in LRVT measured by a five point Likert scale from "extremely interested" (5) to "not interested at all" (1).

	NBTs	GSs	All
Interest in collecting money from tourists for a fund for landscape quality improvement			
Mean	2.14	1.45	1.91
n	22	11	33
t value of t-test for equality of means	1.826		
p	0.078		
Interest in paying money to a fund for landscape quality improvement			
Mean	1.96	1.67	1.88
n	23	9	32
t value of t-test for equality of means	0.616		
p	0.542		
Interest in making a private agreement with a forest owner for improving landscape quality			
Mean	2.24	1.40	1.97
n	21	10	31
t value of t-test for equality of means	1.966		
p	0.059		

The fund would pay compensation to forest owners for improving the quality of landscape. The average value for all companies was 1.91, indicating that general interest is not very high (Table 3). The corresponding value of the NBTs (2.14), however, was statistically higher than the value of the GSs (1.45) (*t*-test for equality of means, t = 1.826 and p = 0.078), indicating that the former group was more interested in collection than the latter one.

The second question was related to the interest of companies in paying their own money for the common landscape management fund. The general average is a bit smaller than above (1.88), with the corresponding figures for the NBTs (1.96) and the GSs (1.67). This difference was not statistically different. Third, we asked about interest in entering into a private agreement with a single forest owner for taking care of a particular site in landscape, finding the highest mean value (1.97). We also found that the corresponding average of the NBTs (2.24) is statistically higher than the average of the GSs (1.40) (t = 1.966 and p = 0.059), indicating understandably that the former group more often see the agreements as a way of possibly benefiting their business.

At the end of the questionnaire, we asked about companies' annual maximum WTP for enhancing landscape amenities for five years in commercial, privately owned forests that are important for the business of the company. One should note that this quasi-WTP is not a real demand side WTP, as the demand for the landscape originates from the visitors of the region. The respondents seem to have special difficulties in answering this, as only 14 of all 44 respondents were able or willing to give a monetary estimate. The given annual figures of the quasi-WTP were noteworthily low, varying from 100 to 1800 euro, with the average value being 679 euro. We found no statistical differences between the answers of NBTs and GSs. The low frequency of the responses, however, decreases the validity of the results.

4. Discussion and conclusions

We examined the importance of environmental amenities for the tourism service sector and assessed the benefits of possible improvements of forest landscapes for future business activities at Ruka-Kuusamo. Moreover, we investigated entrepreneurs' willingness to participate in and to pay for the proposed local PES mechanism, LRVT. We compared the survey responses of two types of companies, NBTs and GSs, which are both well represented and operate in the Kuusamo region in Finland.

We found that respondents were, in general, very satisfied with the natural environment of the region, especially regarding the beauty of landscape, the quality of local national parks, and biodiversity. In contrast, they are less satisfied with recreational facilities, such as the maintenance of recreational routes and resting places. Moreover, around 14% of the respondents evaluated the quality of commercial forests for tourism low. We also found that the beauty of landscape had the largest importance, followed by biodiversity and water quality for the representatives of companies. This suggests that they evaluate as crucial features of the tourism environment not only the visual landscape but also the state of natural environment; it should preferably also have a high quality in terms of biodiversity. Beautiful landscape and high biodiversity are also appreciated by visitors, as they are most willing to pay for enhancing these forest features in the region (*e.g.* Tyrväinen et al., 2014; Juutinen et al., 2011). Regarding the comparative results between the two company types, the quality of landscape seems to be an important contributor for the NBT businesses, whereas biodiversity and landscape have rather equal importance for GSs. The reason for the latter result may be that Oulanka National Park, the most popular national park in Finland with annually more than 200,000 visits (Oulanka National Park, 2018), is a well-known tourist attraction of the whole region, whereas many NBTs provide their activities in the middle of privately owned, commercially managed forests. Moreover, companies providing general services probably would not know in detail the expectations and wishes of tourists regarding environmental quality in the region.

A noteworthy result is that companies assessed that adapted forest management practices that improve the landscapes would benefit their business in particular through an improved image of the Kuusamo area.

This is understandable as a good image is an important attraction factor for tourism securing the demand over the long run and benefiting all companies in the area. NBTs found the improvement to be more beneficial for their business operations than GSs because their business is more directly dependent on landscape quality. Moreover, the anticipated change was evaluated to increase the possibilities for NBTs to better provide services and to respond to customers' expectations. It is worth pointing out, however, that the NBT sector typically offers various types of services to customers, and therefore, the companies also vary quite considerably in their operating environments and infrastructure (Petäjistö and Selby, 2014; Margaryan, 2018; Margaryan and Fredman, 2017).

The companies estimated that the improvement of landscape quality in the core area and the wider area of NBT would annually increase their revenues by 4.5 and 6.0% on the average, respectively. This result is in line with Lerner and Haber (2001) who found that an attractive environment increases the revenues of companies. While the improvement in the core area was assessed to inflict approximately the same increase for both groups of companies, NBTs expect an additional increase in business activities if the area of the quality increase would be expanded to the wider area. The landscape quality increase in the wider area would be especially beneficial for core tourism companies. This is an important finding for land-use planning in Ruka-Kuusamo, as elsewhere in rural areas with potential for NBT, finding a balance with different land-uses and economic sectors is often challenging. It would be logical for a local policy maker to make decisions to increase protection of landscape in the core area where the monetary revenues are greatest. Local citizens probably would understand the logic behind these kinds of decisions relatively well if compatibility with forestry at a general level in Kuusamo would be pursued. It is, however, less obvious to make decisions on protecting landscapes in areas located further away from the main tourism resort, where the current revenues are not as great and where other activities, such as commercial forestry, have an important role in provision of welfare. In addition to increased revenues that the improvement of the landscape is likely to produce for the present NBTs, this kind of policy may create additional advantages in two ways in the future. First, if the companies offer tourism activities in more numerous and diverse beautiful sites, the demand for the services will probably rise. Second, it may create opportunities for potential new companies to enter into the markets. This future potential is lost, if the landscape quality degrades due to increasing forest harvesting. Thus, if the developer of a tourism business wishes to enhance NBT's business opportunities, landscape improvements should not only be targeted to the core area close to the main tourism facilities, but they should be targeted more widely to the Ruka-Kuusamo region.

A calculation of the increase of the total revenues in monetary terms leads to approximations that the annual revenues of the local economy increase with some amount between 13.7 and 15.0 million euros owing to the landscape improvement in core area and between 20.6 and 22.5 million euros in wider area. Making these amounts proportional to the acreages of the areas, the marginal annual revenue of the improved landscape in the core area varies between 622 and 682 euros per hectare and in the wider area between 141 and 154 euro per hectare. It should be noted that the low number of observations decreases the reliability of the results, and these figures should be only used as an example of estimation of economic benefits and a rough monetary measure of maximum profitable investment on the landscape quality improvements in the study area. If these benefits are compared to the hypothetical demands on monetary compensation for quality improvements that were found to vary between 82 and 319 euros (Mäntymaa et al., 2018), the benefits of implementing LRVT are larger than its costs. An additional fact that increases the cost-efficiency of the PES system both in the core and wider area is that compensation needs not be paid for every hectare of the target area but only for the sites that are important for the landscape beauty and the tourism business. However, the above estimate does not account for the transaction costs of LRVT that, of course, reduces the cost efficiency of the mechanism (cf. Juutinen et al., 2008).

Related to the possible ways of collecting funds from visitors to LRVT, the respondents preferred a payment that was included in accommodation services. Its popularity may come from the fact that this kind payment resembles a city or tourist tax collected from visitors in many tourist areas in Europe. A weakness of the accommodation-related payment is free-riding, *i.e.* only those who stay overnight in a hotel or resort village would pay it, but not those who stay in private cottages or other non-commercial places or those who make day visits. In order to secure adequate funding for the mechanism with a small sum for payers, it would be important to equally reach various types of visitors effectively.

With respect to many organizational aspects of the LRVT, the tourism companies are not yet very well prepared. Only a few of the companies involved in the survey were ready to pay themselves or of those who were ready, they were not willing to pay very much for enhancing landscape quality, for example. NBTs are more interested than GSs in collecting money from tourists to fund LRVT, as well as to make private agreements with forest owners for landscape improvements. This suggests that companies that directly use nature for their business see their dependence on the quality of environment more clearly. It must be noted that the idea of LRVT is new for both the people working in the companies and the rest of the community. One of the key tasks for the future is to inform and communicate with the actors of local companies and increase their awareness so that they better understand the role of landscape and the environment for NBT business and for the image of the region. The growth of tourism in the region together with the rising demand for timber for the wood processing industry may increase the tourism sectors interest in acting in order to secure amenity benefits of forests for their own business purposes. Moreover, a collaborative development process (*e.g.*, Healey, 1997; Tikkanen et al., 2017) should be implemented so that the local stakeholders would be truly able to participate in the development of an LRVT model that would be acceptable and executable in practice.

In addition to values related to the demand of the natural environment by visitors (Tyrväinen et al., 2014) and a willingness to offer stands and associated compensation claims by forest owners within LRVT (Mäntymaa et al., 2018), the findings of this study are fundamental as they reveal the opinions of and estimated benefits for the nature tourism companies. These aspects should be combined and carefully considered for developing and implementing a suitable and working PES mechanism in the future.

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Appendix

Summary of questions analyzed in the study:

Year of the foundation of the company

Development of the revenues of the company in recent 5 years: decreased; unchanged as before; increased

Services your company supplies to customers: accommodation, food services; tourism program services, safaris, fishing and hunting trips; services of skiing center, rental of skiing equipment; retail trade; other services

The most important service of the company assessed with respect to revenues (see the list above)

Number of the clients in recent 12 months

The main season of business: winter; summer; year-round

Expectations of the development of business in coming 5 years: business ends; decreases; unchanged as before; increases

Respondents' opinions of the quality of environmental and recreational services in Ruka-Kuusamo area (six point scale from "very good" to "very bad" and "don't know"): biodiversity; water quality; landscape beauty; quality of recreational environment; quality of commercial forests for tourism; quality of national parks for tourism; rate of pristineness and wilderness of the area; length of routes; maintenance and guidance of routes; number of resting places; maintenance of resting places

Which of the following two environmental values produces more benefits to your company and how much more? Please assess the benefits with a scale from −9 to 9, where −9 = the former produces much more benefits, 0 = both equally, and 9 = the latter produces much more benefits: biodiversity—landscape beauty; biodiversity—-water quality, and landscape beauty—water quality.

How important are the following areas for the business of your company in the past 12 months (six point scale from "very important" to "not important at all" and "don't know"): national parks; other protected areas; commercial forests

How important are the landscapes of following areas for the business of your company (six point scale from "very important" to "not important at all" and "don't know"): vicinity of the company within about 1 km; a compact site where the company arranges nature activities; vicinity of the Ruka tourism resort within 5–10 km; sites along hiking and skiing routes; roadsides; waterfronts, and landscapes of Ruka-Kuusamo area in general?

How beneficial would it be and what kind of benefits could the improvement of landscape in commercial forests provide to your company (six point scale from "very beneficial" to "not beneficial at all" and "don't know"): possibilities of a company to provide services; possibilities of a company to respond customers' expectations; customers would visit the area more frequently; customers would stay longer in the area, and image of the area would improve?

How much the improvement of landscape in a core area of nature based tourism (shown in a map) would increase the business of your company (%/ year): number of clients; revenues

How much the improvement of landscape in a wider area of nature based tourism (shown in a map) would increase the business of your company (%/ year): number of clients; revenues

The interest of the company in collecting money from tourists for a fund for landscape quality improvement: six point scale from "very interested" to "not interested at all" and "don't know"

The best way of collecting money from visitors to a landscape management fund: payment related to accommodation, 1 euro/night/person; equal payment per every purchase of a service or product; share of the payment of a purchase for a service or product; usage charge for hiking and skiing routes; seasonal payment; payment for the owners of second homes; other way

Companies' interest in paying money for a landscape management fund or making agreements in LRVT: six point scale from "extremely interested" to "not interested at all" and "don't know"

Companies' annual maximum willingness to pay for five years to enhance landscape amenities in commercial, privately owned forests that are important for the business of the company: less than 500 €, how much?; 500 €; 650 €; 800 €; 1100 €; 1400 €; 1800 €; 2300 €; 3000 €; 3900 €; 5000 €; more than 5000 €, how much?; "don't know"

Sales of your company or the branch of the company located in Kuusamo in the recent 12 months: less than 20,000 €; 20,000–49,999 €; 50,000–99,999 €; 100,000–199,999 €; 200,000–299,999 €; 300,000–499,999 €; 500,000–999,999 €; 1 million € or more, how much?

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