



ENVIRONMENTAL IMPACTS OF TOURISM

Case: Pyynikki Outdoor Recreation Area

Olga Semenova

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TAMPEREEN AMMATTIKORKEAKOULU
Tampere University of Applied Sciences

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
Degree Programme in Tourism

SEMENOVA, OLGA:

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The aim of this thesis was to explore the environmental impacts of tourism in Pynikki outdoor recreation area situated in Tampere and find out if tourism in Pynikki was environmentally sustainable one. Pynikki is one of the most well-known sights around the city, so it easily draws attention of tourists with its natural beauty and picturesque panoramas. The objectives included examination of various areas of impact, such as air and water quality, natural and geological resources, vegetation and wildlife, as well as man-made environment. After revealing the impacts the analysis was done in order to estimate the overall environmental sustainability of tourism in the studied area.

The theoretical framework included definitions of several concepts: sustainable development, sustainable tourism, and nature tourism. The theory of environmental impacts of tourism was based on the book by Tamara Rátz and László Puczko "The impacts of tourism". Principles of sustainable nature tourism in protected areas developed by Metsähallitus were used to analyse the results.

Qualitative research method, such as observation, was used to collect the primary data for the research. Pynikki area was visited twice in February 2013 to take pictures and observe the environment of the place. Secondary data sources included official web pages of Tampere city and statistical information gained from Visit Tampere.

The results showed that although sustainability cannot be fully reached, as tourism has impacts like any other industry, a scope of work had been done to monitor the impacts and prevent negative influence. Management of the area is rather good, yet it cannot control every visitor and eliminate all the negative impacts.

Keywords: sustainable development, nature tourism, environmental impacts

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1 INTRODUCTION

The aim and purpose of this thesis is to explore the impacts of tourism on the environment of Pyynikki outdoor recreation area situated in Tampere and find out if tourism in Pyynikki is environmentally sustainable one. Pyynikki is one of the popular places of the city, which draws attention of tourists with its picturesque views and beautiful nature.

The main research question of this thesis is if tourism in Pyynikki is environmentally sustainable. To find the answer to this question the author examines different areas of impact, such as air and water quality, natural and geological resources, vegetation and wildlife, as well as man-made environment.

The main theory of the thesis involves the theory on defining and analyzing the environmental impacts of tourism. The book by Tamara Rátz and László Puczkó “The impacts of tourism” lies in the basis of theoretical framework. Primary attention is given to the concepts of sustainable development, physical impacts and nature tourism. Principles of sustainable nature tourism in protected areas developed by Metsähallitus were used to analyse the results.

Qualitative research method has been chosen to conduct the research. The author visited Pyynikki twice in February 2013 to take pictures and observe the environment of the area. As observation has been done in winter time and some features of landscape and forest nature were covered with snow, the author decided to use some pictures taken in summer time by her friends or found on the Internet. Secondary data sources included official web pages of Tampere city and statistical information gained from Visit Tampere.

The structure of the thesis is simple. Chapter two describes the research plan and theoretical framework of the thesis. Chapter three gives the information about Pyynikki, its history, facilities on site, activities available for the visitors, as well as protection regulations and management plans. Results of the observation and their analysis can be found in chapter four. Chapter five tries to give an answer to the main research question and conclude the research.

2 RESEARCH PLAN AND THEORY

2.1 Research topic, aim and purpose

Sustainable development has become a very relevant topic over past years. With the rapid technical progress it has become both easier and more difficult to protect natural resources for the future generations. In tourism industry the topic of sustainability is extremely important as well due to the accessibility of destinations and fast growth of traveller amounts.

The purpose of this thesis is to explore the environmental impacts of tourism in Pyynikki outdoor recreation area situated in Tampere. Pyynikki is one of the most well-known sights around the city, so it easily draws attention of tourists with its natural beauty and picturesque panoramas. The information gained during the research might be helpful for the city of Tampere in order to take appropriate actions and avoid negative influence on the environment in case this kind of influence would appear.

The aim of this thesis is to find out, if nature tourism in Pyynikki is environmentally sustainable one. The objectives include examination of various areas of impact, such as, air and water quality, natural and geological resources, as well as man-made environment. Analysing results with the help of the relevant theory will reveal the possible areas of improvement and show how constantly developing tourism in Tampere affects the environment of the nature area.

2.2 Concepts and theory

The main theory of the thesis involves the theory on defining and analyzing the environmental impacts of tourism. The book by Tamara Rátz and László Puczkó “The impacts of tourism” lies in the basis of theoretical framework. Primary attention is given to the concepts of sustainable development, physical impacts and nature tourism. The concept of sustainability is quite wide. It will be explained shortly in this paper also touching upon sustainability in tourism industry and stressing especially sustainable nature tourism.

2.2.1 Sustainable development

The concept of sustainability explores the relationship among economic development, environmental quality, and social equity. This concept finds its beginning at the United Nations Conference on the Human Environment in Stockholm in 1972. During the conference the international community first discovered the connection between quality of life and environmental quality. However, many years passed by until the term “sustainable development” gained its definition. (Rogers, Jalal & Boyd 2008, 42.) In 1987 it was defined as “development that can meet the needs of the present generation without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987, 43, according to Rogers, Jalal & Boyd 2008, 42).

This definition set the community thinking of complex decision making that makes it possible to combine the economic and social needs of the people with the regenerative capacity of the natural environment. A dynamic process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change coincide with future as well as present needs means sustainable development. In the final analysis, sustainable development must rest on political will of the governments as critical economic, environmental, and social decisions are made. (Rogers, Jalal & Boyd 2008, 42.)

A number of definitions of sustainable development can be found in the works of different authors. There is a vast literature on sustainable development, which also provides other definitions, concepts, principles, criteria, indicators, and references. Several authors use the famous Brundtland Report definition cited earlier. Some have adopted this definition or offered a slight change in emphasis. Others have added further requirements about particular actions that might be necessary to meet the stated goal. The main idea of each definition is a common concern about the way in which the crop of development is shared across generations. (Atkinson, Dietz & Neumayer 2007, 2.)

Sustainable development has three dimensions: economic, environmental, and social. These are frequently called the triple bottom line, and are used to measure the success of a particular development program or project. Each component should be given equal attention in order to ensure a sustainable outcome. This balance becomes obvious when each component is examined individually. (Rogers, Jalal & Boyd 2008, 42.)

This thesis, however, holds a focus on the ecological approach, which means maintenance of the resilience and robustness of biological and physical systems. It is impossible to entirely separate one dimension from the others but more attention is paid to the environmental sustainability and impacts on the physical environment caused by tourism.

2.2.2 Sustainable tourism and nature tourism

Theoretical background for analysing the data collected through observation of Pyynikki area requires better understanding of several concepts, such as sustainable tourism, nature tourism and, the most important, physical impacts of tourism in the destination.

First of all, for better understanding of what physical or environmental impacts of tourism are, it is inevitable to know what the word “tourism” means. According to World Tourism Organization (1989), “tourism is the temporary movement of people to destinations outside their normal place of work and residence, the activities undertaken during their stay in these destinations and the facilities created to cater for their needs” (according to Rátz & Puczko 2002, 15). This definition reveals at least three areas, which have impact on the environment: transportation, activities, and facilities. These areas are subjects to examine when analysing the different kinds of impact in Pyynikki.

The next step in defining concepts in this thesis is finding out how sustainability applies to tourism industry, what indicators are used to measure it and how it can be ensured. Speaking about tourism, it must be said that it will never be completely sustainable as every industry has impacts, but it can work towards becoming more sustainable. World Tourism Organization (2004) gives the following definition of sustainable tourism:

Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary.

Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them. (Sustaining Tourism 2011.)

Tourism is one of the most promising drivers of growth for the world economy. The sector is critically important from a global resource perspective because of its impressive size and reach. Even small changes toward greening can have important impacts. Furthermore, the sectors' connection to a number of other sectors at domestic and international levels means that changes in practices can provoke changes in many different public and private actors. For tourism industry, the key to being a successful supportive economic and political force for conservation is careful planning and efficient management. These concepts lead the way to sustainable tourism that is compatible with sustainable development. (United Nations Environment Programme.)

There are many classifications and types of tourism. It can be classified according to destinations, purpose of travel, amounts of travelers etc. (Rátz & Puczko 2002, 20-21). Nature tourism is the type of tourism, which is paid attention to in this thesis. Many of Finland's nature areas are significant tourist attractions. The main purpose of protected nature areas is to protect natural features but many areas are used for scientific research, amateur nature studies and outdoor recreation, like Pyynikki area, which is examined in this paper (Metsähallitus 2010). The last mentioned kind of use could usually be described as nature tourism.

There are two different concepts concerning visiting nature, which are slightly different in meaning: nature tourism and ecotourism. Nature tourism is a kind of tourism, which takes place in nature environment and tries to comply with the principles of sustainable development so that it does not exceed nature carrying capacity and does not disturb biodiversity of the area (Hemmi 2005, 333). Ecotourism can be defined as tourism to the nature destinations, in which the revenue gained from tourism and events taking place at the same time help promoting nature conservation as well as the local economic development (Hemmi 2005, 352). The concept of nature tourism is closer to the particular case of this thesis, as Pyynikki is a well-known outdoor recreation area, where visitors can have a rest, do sports and enjoy the views.

The goal of sustainable nature tourism is to provide visitors with valuable experiences in natural surroundings in fully sustainable ways. Ecological sustainability involves respecting natural values, as not all areas are suited to tourism. Nature tourism has the potential to improve both economic and spiritual well-being of the region but there is always a challenge in balancing between providing adequate visitor experiences and

services, protecting the ecological and cultural values of the area and ensuring the long-term sustainability of the site. (Metsähallitus 2010.)

2.2.3 Environmental impacts of tourism

Tourism industry, like all other industries, can have various economic, environmental and social impacts. This particular thesis examines environmental impacts of tourism in the nature area of Pyynikki. Natural areas have major environmental impact, which is the identity of the place, such as a country garden or a wilderness. The fulfillment of this identity has impacts on all aspects of the natural environment, ranging from wildlife, through plants to soils. (Eagles & McCool 2002, 42.)

The physical environment of the destination can be roughly divided into two major groups: natural environment and built environment. While the first mentioned includes natural resources, flora and fauna, as well as landscapes of the place, the second one includes everything people established or constructed on site. Man-made or built environment may also be affected by tourism same as natural environment. (Rátz & Puczkó 2002, 171, 202.)

The simplest classification of impacts draws attention to the four dimensions: local vs. global, direct vs. indirect, reversible vs. irreversible, and positive vs. negative (Rátz & Puczkó 2002, 180). These dimensions are used as a framework in the analysis of the data collected for the research in Pyynikki.

Global vs. local impacts

Global impacts are those that may influence any being on Earth, and local actions cannot solve the problems caused by these impacts. It usually takes time to observe the consequences. As global processes are dynamic, they change in time and sometimes it may take years for them to develop and be perceived by people. Moreover, elimination of the effects or adaptation to them may also take very long. Local impacts, on the contrary, are easy to observe in a definable area. They can be managed more easily than the global ones. There is no clear distinction between local and global impacts on the natural and built environment. Both are affected by local impacts, like mass tourism, as well as global impacts, for example acid rains. (Rátz & Puczkó 2002, 180-183.)

Direct vs. indirect impacts

Direct impacts are those that can be perceived easily even by the “man in the street”, while indirect impacts become obvious after a longer period of time. Sometimes it is even hard to establish the source of pollution, whether it is tourism or local community. In case of direct impacts, the impact generator has a direct relationship with the factor affected. Indirect impacts may develop through 3-4 stages of change or even more. There are more direct impacts on the natural environment than on the built environment. (Rátz & Puczko 2002, 183-185.)

An example of a direct impact could be littering or trampling over vegetation, while indirect impacts should be looked at in the global sense. A large part of the tourism industry is simply an addition to urban accommodation and infrastructure, and existing transport networks. The production of goods and services usually involves other parts of the human economy, which leads to the increased energy and water consumption, different kinds of pollution, and generating large amounts of waste. All these indirectly affect the physical environment of the destination. (Buckley 2004, 10.)

Reversible vs. irreversible impacts

Reversible impacts mean that the original conditions or similar ones can be restored, while with irreversible impacts it is not possible. The example of a reversible impact is development of parks. Extinction of species is an irreversible impact. Very often impacts can be reversed only over a long period of time or there are also so called “quasi reversible” impacts, which are possible to reverse in theory but practically the costs of elimination are too high. Impacts on the natural environment are not more easily reversible than those on the built environment and vice-versa. (Rátz & Puczko 2002, 185-186.)

Positive vs. negative impacts

The most commonly used classification of impacts is that of their positive or negative nature. Negative impacts usually get more attention, while positive are less quoted and not that well known. The reason for that may be the indirect nature of the positive

impacts, which can be observed more often, than the direct nature of the negative impacts. (Rátz & Puczko 2002, 186-187.)

Firstly, positive impacts of tourism are worth to be mentioned. Tourism in and around protected areas can be a tool for conservation. Currently the national park status is seen as a positive factor promoting tourism development, and the network of nature conservation areas is considered a central attraction for nature-based tourism (Saarinen & Hall 2004, 43). Tourism is able to build support and raise awareness of the many important ecological, cultural, and recreational values of the protected areas. Additionally, tourism may generate income in the areas of operation that can be used for conservation work. It should also contribute to the quality of local life, support traditions and respect sacred sites. Moreover, tourism provides local employment and education of visitors. (Bushell & Eagles 2007, 6.)

The positive relation between tourism and nature conservation does not mean that there is no critique against negative environmental impacts. The forms of mass tourism are considered highly problematic when it comes to ecological and social impacts (Saarinen & Hall 2004, 43). This is, however, quite logical, as the bigger amounts of visitors will certainly disturb both nature environment and local community.

Badly managed tourism can cause a great pressure on an area and excite soil erosion, increased air, soil and marine pollution, natural habitat loss, increased pressure on endangered species and heightened vulnerability to forest fires. There is often a threat to fresh water resources, which sometimes leads to conflicts between tourist-related and local consumption. Finally, CO₂ emissions cause a problem in terms of sustainability, particularly with the air transport. (United Nations Environment Programme.) Tourism developers and operators may adopt environmentally friendly techniques into the production process. However, the leading role in making decisions still belongs to reducing financial costs rather than environmental impacts. (Buckley 2004, 10.)

2.2.4 Monitoring and impact assessment

Solid understanding of the impacts is important for managing a destination and avoiding negative influence. Efficient monitoring should be done to get the image of the scope of impacts. Typically, area managers develop a programme to measure the impacts of specific programmes and activities (Eagles & McCool 2002, 151).

Metsähallitus is a state-owned enterprise that runs business activities while also fulfilling many public administration duties. It administers more than 12 million hectares of state-owned land and water areas and manages almost all of Finland's national parks and other protected areas. To help improving nature tourism and the related facilities, Metsähallitus has drafted a special set of principles for sustainable nature tourism in protected areas, wilderness areas and sites in special conservation programmes, which are more likely guidelines for making tourism in the nature areas more sustainable. (Metsähallitus 2010.)

The following principles are those of the set that touch upon ecological aspect of sustainability. They are developed to guide the practice and operations in nature areas. These principles are used in this thesis to analyse the nature of impacts revealed with the observation of the area.

1. Natural values are preserved and all activities promote nature conservation

Nature is a primary reason for visiting the area, so visitor can learn about nature and conservation. Tourism is suitable not for all areas, hence it should not disturb nature and should find itself in areas with suitable facilities. The amounts of visitors and group sizes are small and they use marked trails wherever possible. Facilities are designed to fit in with the surroundings, thus the most beautiful natural areas are left undeveloped. Erosion and other impacts are monitored, with corrective measures taken as needed.

2. The environment is subjected to as little pressure as possible.

Nature holds the first priority, so every effort should be taken to avoid damage and disturbance. Visitors are supposed not to leave trace behind them including any kind of waste. Emissions of all kinds are minimised, and renewable energy sources preferred.

3. Visitors increase their understanding and appreciation of nature and cultures.

Information about local culture and nature conservation is easily available and attractively presented. Visitors have an opportunity to contribute to the management and protection of the area.

(Metsähallitus 2010.)

The areas of impact should be defined in order to assess the impacts of positive and negative nature. In analysis of the environmental impacts in Pyyrikki the author looks at various elements of the environment affected by tourism that can be categorized as follows:

1. Air quality.
2. Geological resources.
3. Water quality.
4. Natural resources.
5. Vegetation and wildlife.
6. Man-made environment.

(Rátz & Puczkó 2002, 187.)

The analysis of tourism impacts on natural environment and built environment should be concentrated on the emitters, the types, the way and the scope of pollution as well as on the indirect impacts. Impact assessment is usually done to decrease the frequency of sudden changes, to moderate the unforeseen and undesired consequences or to compensate against the unavoidable negative impacts. (Rátz & Puczkó 2002, 242.) In this particular paper, the analysis of impacts is done in order to answer the main research question: is the tourism in Pyyrikki area sustainable, does it do any harm to the natural environment of the place or does the place benefit from tourists.

2.3 Research questions

The main question of the present research is as follows:

Is tourism in Pyyrikki environmentally sustainable?

In order to evaluate environmental impacts of tourism in the natural area it is important to find out if the activities taken on site are sustainable. Preserving natural resources for future generations has become a necessary action for all the people. As Pyyrikki is a popular place to visit among both guests and citizens of Tampere, there is a certain danger to the environment of the area. Possible noise and waste, increased soil pressure and other impacts may cause harm both to the inhabitants and to the natural resources of

the area. To make it easier answering the main question of the research the author has divided it into two sub-questions, which are presented below.

What are the impacts of tourism in the nature area?

Sustainability is a complex concept. It touches upon many different aspects. Impacts of tourism in natural area may touch upon different issues, such as cultural, economic, and environmental. As it has been decided, this thesis explores only environmental impacts of tourism and tries to define different kinds of influence present in the studied area.

First step in trying to answer the main research question is to define the exact areas of impact in the particular area and find out the character of them, if it is positive or negative. The overview of gathered knowledge will make it possible to analyse the situation and come to a conclusion about the sustainability of tourism in Pyynikki.

How is sustainable development supported in order to avoid negative influence on the environment?

As it was already mentioned, Metsähallitus manages almost all of Finland's national parks and other protected areas in places owned by the state. To help improving nature tourism and the related facilities, they are developing principles and indicators to monitor sustainability at the objects.

According to everything said above, the author assumes that the city of Tampere together with Metsähallitus take appropriate actions to prevent negative influence of tourism on Pyynikki recreation area. It is important to find out how sustainable development is being supported managing protected natural area in the heart of the city. Answering this particular question it will become possible to judge about the sustainability of tourism in this particular place as the whole.

2.4 Data and methods

The research questions were set up in the beginning of the research process. In order to answer these questions the author decided to use qualitative research method, such as

observing the territory of the recreation area. Qualitative research is designed to interpret data, rather than taking it as read, and interpretative observation is one of the methods that can be used to carry out this kind of research (Holloway 2004, 60). It was clear, that taking pictures and watching the site was needed to gain information about the real situation and the consequences of the techniques and actions taken to protect the environment of the city to avoid negative impacts. Thus, the area itself was the primary data source.

In order to examine the topic two kinds of data were used. Primary data included observation results and pictures taken on site but there was also a need in supplementary information about Pyynikki and its history. The author decided to use secondary data as well to comply with this need. Secondary data sources were web pages of Visit Tampere and the City of Tampere and statistical information received from Visit Tampere.

Observation was the main data collection method. The author visited Pyynikki twice, on the 16th and 20th of February 2013, to collect data and take pictures. As it was winter time and some features of landscape and forest nature were covered with snow, the author decided to use some pictures taken in summer time by her friends or found on the Internet. To analyse the collected data the theories of sustainable development and environmental impacts of tourism were used. Guidelines for sustainable nature tourism were used to process and analyse the information as well as find the answers to the research questions.

2.5 Research process

This thesis can be roughly divided into three parts. Chapters 1-2 describe the purpose and the topic of the thesis, main theories and concepts, methods of collecting and analysing data as well as research questions. Chapter 3 includes the description of Pyynikki and its history telling about the activities and facilities available in the natural area. Chapters 4-5 present the collected data followed by analysis and results of the research, which answer the research questions stated in the beginning. The thesis ends to a conclusion in chapter six.

3 PYYNIKKI

Pyynikki is one of the most well-known and attractive places both for tourists and local people in Tampere. Picturesque sceneries and breathtaking Northern nature pulls visitors from different towns and countries. Pyynikki has its own history and many facilities for various kinds of recreation. Everyone can choose something that suits them.

This chapter describes in more details the diversity of facilities and activities in Pyynikki, its history and the ways of how to get there. It gives the overall information about the place and the environment in there, as well as the actions taken in order to protect the natural area from negative influence.

3.1 Pyynikki ridge

The Pyynikki ridge is one of Tampere's most remarkable natural areas of beauty. It is situated in the western part of the city only two kilometers away from the city center. The Pyynikki ridge forms a narrow neck of land between the lakes Näsijärvi and Pyhäjärvi. Pyynikki is also the protected natural area and recreation area (picture 1, page 17). It covers 49.62 hectares, which means it to be the biggest protected area in Tampere. (The City of Tampere 2011.)

The ridge was formed during the last ice age about 10,000 years ago. Natural banks and formations left by ancient seas and lakes cover the slopes of the ridge. Pyynikki is part of a line of ridges which is over 200 kilometers long, reaching from Kankaanpää to Salpausselkä. The Pyynikki ridge's height is 162 meters above sea level, which makes it the highest of these ridges. Additionally, it rises 85 meters above the level of Lake Pyhäjärvi. Thus, the Pyynikki ridge is regarded as the highest gravel ridge in the world. Pyynikki also includes a moraine ridge and bedrock formed long before the ice age. (The City of Tampere 2011.)



PICTURE 1. The map shows different kinds of area in Pynikki. Green colour marks protected area, brown – recreation area, and yellow – other area (Tampereen kaupunki 2012)

3.2 History

Pynikki has been part of the city since its foundation in 1779. The area had different purpose of use in different times. In the past it was a cattle pasture, a hunting area and a place from which residents could obtain firewood for their homes. The first restrictions for forest use came into power in 1803. There was a penalty for leaving the leftovers from cutting trees. It was entirely forbidden to cut the trees in the area in 1830. In the coast of Pyhäjärvi, there were villas of well-known families of Tampere. (Tampereen kaupunki 2012.)

In 1850's, the industrial activity had got its beginning in Pynikki. In 1856 match factory was built between Jalkasaari and Joselinniemi areas. The factory was destroyed in the fire in 1865 but rebuilt again soon. In the beginning on 1900's, the factory was deconstructed but some leftovers of concrete foundation are still on view. In 1890, Nikolai Bauer found a tricot factory, which had later become Suomen Trikoo Oy. (Tampereen kaupunki 2012.)

The coast area of Pynikki had become a national celebrations place since 1875. Summer fests were taking place in Pynikki three times a summer. Pavilions and stages for agriculture fairs, as well as singing and music festivals were built to the area. Later

on, those buildings were destroyed by the fire but the stage was built up again. (Tampereen kaupunki 2012.)

The protection of the landscape started as early as in the 1840's when the area was reserved for recreational purposes and tree felling in the ridge area was prohibited. This was the start of the present day handsome pine forest. Pyynikki's central areas were given the status of a nature conservation area by the Häme Provincial Government decision on June 5, 1993. Nowadays Pyynikki contains 32 hectares of green areas that are used as local recreation areas and parks. (The City of Tampere 2011.)

3.3 Facilities

There are several objects in the area, which are part of the built environment of Pyynikki. Facilities located in and around the protected area include observation tower with the cafeteria, summer theatre, several buildings of various kinds of use (houses for inhabitants, offices etc.), hotel Scandic Rosendahl, sports facilities (sports field, Varala International Training and Sports Center, covered exercise area, play- and sports ground near Palomäentie), and a couple of monuments (monument to Lauri Viita and monument erected on an ancient shore). Picture 2 (page 18) shows the location of these objects on the map. Two of them are worth to be described in more details as they attract tourists coming to Tampere from everywhere, hence experience the impacts of mass tourism on the environment.



PICTURE 2. Pyynikki nature conservation area (Photo: Olga Semenova 2013)

Observation tower

Observation tower together with the cafeteria is situated on top of the ridge. The tower was completed in 1929. The traditional cafeteria of the Pyynikki observation tower has operated as a family business for over 20 years and has become well-known for its doughnuts. There are about 30 seats, indoor and outdoor, available for the customers throughout the year and around 50 more on the terrace during the certain season. The main attraction of the tower is a wonderful view spanning over two lakes and the entire city of Tampere. The beautiful Pyynikki esker surrounding the tower was selected as nationally valuable landscape attraction in 1993. (Pyynikki Observation Tower Cafè 2011.)

The original tower was built in 1888 on the top of Pyynikki ridge. It was made out of wood. However, it was damaged at the bombardment in the 1918 war. Later on, in 1925, it was decided to rebuild the tower and funds for its construction started to be raised. The current tower is made out of red granite and it was designed by the assistant town architect at that time Vilho Kolho. Its construction was completed in 1929 to honor the city's 150th anniversary. (Pyynikki Observation Tower Cafè 2011.)

The current 84-year-old tower is 26 meters tall, and at top there are scenic levels both indoors and out in the open air. The top can be accessed by both elevator and stairs, and the entrance fee is 50 cents for children from 4 to 15 years and 2 euros for anyone older. Even if the height of the tower itself wouldn't feel spectacular, considering its location at the top of the Pyynikki esker in the middle of Tampere the view from the top has to be clear and magnificent in every direction. (Pyynikki Observation Tower Cafè 2011.)

Pyynikki Open Air Theatre

Pyynikki Open Air Theatre with its revolving auditorium was founded in Joselinniemi in 1948. The auditorium has 836 seats and the summer season's shows are sold out far in advance year after year. Until now, around 3 million people have watched the shows of the theatre. (Pyynikin Kesäteatteri.)

The theatre has one interesting feature that attracts many visitors during the summer months. Summer theatre has used a steamship, tank and aeroplane in past shows, and

not only as static parts of the set. These are things that would not be possible in a conventional theatre. Another thing that makes the theatre attractive and special is the revolving auditorium which turns 360 degrees. It is the oldest revolving auditorium of its kind in the world which is still used for shows today. (Pyynikin Kesäteatteri.)

Tampere Summer Theatre was founded by two visionary actors, Yrjö Kostermä and Toivo Mäkelä. In 1955, Tampere Theatre Society took over the running and administration of the theatre and its name was changed to Pyynikin Kesäteatteri. The theatre has attracted some of Finland's finest theatre practitioners and some of its shows have made theatre history. The most legendary production was Väinö Linna's "Tuntematon Sotilas" (The Unknown Soldier), a poignant story of the Finnish Winter War which resonates deeply with the Finnish national psyche. (Pyynikin Kesäteatteri.)

The revolving auditorium was designed by architect Reijo Ojanen and its building was completed in 1959. It didn't need renovation until 1995. Ten years later, in 2005, a roof structure was added to provide protection for the audience from the changeable weather, although the actors perform under open skies in any weather. (Pyynikin Kesäteatteri.)

3.4 Activities

There is a wide range of activities that can be accessed in Pyynikki area, especially in summer. The number one all year round activity is walking. There are well defined and marked trails in the area, which can be used to enjoy the views, nature and to some extent fresh air during every season of the year. Residents also take their pets together with them to Pyynikki.

Nature trail goes around the entire area and passes by several panorama places. The trail is 9 kilometers long. There are 20 checkpoints along the way to introduce the nature of Pyynikki. The map and all the information about the trail is located nearby the observation tower. (Tampereen Kaupunki 2012.)

The second activity available is exercising and doing sports. Pyynikki is used by residents as an exercising area in all seasons. Some of the trails are lit and they function as skiing tracks in the winter. There are two pedestrian and bicycle paths on the ridge but cycling is prohibited elsewhere on the ridge. The ridge and its nature trail are also of great educational importance. (The City of Tampere 2011.) Beside one of the trails there

is a covered exercise area. There is also a beach with a lawn in Pyynikki, so in summer it is possible to swim in the lake and take sunbaths. Next to the beach, there is a playground, ball game ground and a tennis court. (Tampereen Kaupunki 2012.)

Observation tower and summer theatre are worth to be mentioned in the list of activities. Observing the spectacular view from the top of the tower, eating delicious doughnuts with a cup of coffee and watching the show in the theatre are the possibilities to spend free time in Pyynikki.

3.5 Transportation

The attention in this section is paid to the transportation within the city. There are various ways to travel to Tampere but they are linked to Pyynikki only indirectly, hence they are not looked at so closely.

The access to the ridge is very easy. One can use own car or travel with the local buses. There are some parking places near the tower, which are located alongside Näkötorrintie. Close to the beach there are more of them. The place is only two kilometers far from the city center, so it is easy to access by walking or cycling. It was already mentioned that cycling is prohibited elsewhere except the specially marked trails. However, it is a handy way to get to the area and explore it.

Two local buses go through the area. Line 10 (Järvensivu-Keskustori-Pispalanharju) Goes in the northern side of the area. There are two bus stops in Palomäentie, both give the easy access to the area and to the tower. Line 25 (Janka - Sammonkatu - Keskustori - Tahmela) goes in the southern part of Pyynikki along Pyynikintie. There are several bus stops on the road, and all of them are situated already in the Pyynikki area. From the bus stop near Hotel Rosendahl, there is a straight path to the observation tower equipped with the stairs. (Tampereen Kaupunki 2012.)

3.6 Protection of the area

Pyynikki area is the area protected by the government. The Nature Conservation Act protects nature of Pyynikki. In order to conserve the nature, specific protection regulations have been applied, as well as utilisation and management plan has been

drawn up. There are definite principles about the use of the area and the soil management in there. The soil management plan is intended to control movement in the area and to restore the eroded ground surfaces. (The City of Tampere 2011.)

Pyynikki's forest changes the further down from the top of the ridge. On the top, there is dry vegetation and on the lower slopes of the ridge there are leafy forests. The most common tree is pine, but also spruce, maple, birch, rowan, European bird cherry and grey alder can be found on the ridge. One of Pyynikki's special features is the vegetation found on the ridge, rocks and in the leafy forests. A forestry management plan for the trees helps preserving the unique character of the forest landscape as complete as possible when replacing old trees. (The City of Tampere 2011.)

Soil management plan

The soil management plan has been developed to guide the walkers in the area and to restore the eroded soil. It is important that everyone follows the given advice and guidelines in order the ground vegetation to be revived. The primary attention is given to information, so the information boards showing the protection regulations and advice on movement in the area have been placed in different parts of Pyynikki. (The City of Tampere 2011.)

The soil management plan includes several measures, and some of them are presented as follows. Paths and walkways of the main routes are renovated and new stairs are built. The number of unnecessary paths has to be decreased as much as possible. Those paths that have been used too much are covered with a mixture of mulch and wood chip, and a thin layer of grass is sown to the covered areas to bind the soil. Renovated areas are temporarily closed for the visitors and information signs are installed to warn the guests of the area. Permanent information signs are placed at the entrances. (The City of Tampere 2011.)

Several sets of stairs are built on the slopes to direct visitors to the recommended routes. Athletic interval training on the slopes erodes the territory and is therefore not allowed. Athletes, too, must use the stairs and specific routes for their cross-country exercise. Cycling is prohibited in Pyynikki's forests, paths and walkways. The pedestrian and bicycle paths crossing the area are marked with traffic signs. Movement in the forest causes damage and erosion to the sensitive vegetation of the Pyynikki ridge, so walking

is only allowed on walkways, renovated paths and stairs. The natural woodland paths must be avoided in order to protect the vegetation. (The City of Tampere 2011.)

Protection regulations of Pyynikki nature conservation area

The restrictions and renovation measures are intended to preserve the unique character of Pyynikki's nature. By following the rules applied in the area while being there, visitors are able to preserve the ridge nature for future generations. (The City of Tampere 2011.) There is a set of restrictions, so called do's and don'ts, applying to the Pyynikki area. Those can be found on the information board nearby the observation tower, therefore everyone should act accordingly while spending their time in Pyynikki.

First, something that is prohibited must be mentioned. It is not allowed to harm the soil, so although there is a lot of space in the area, the municipal rules apply also in there. For example, responsible dog owners keep their dogs on a leash and only use the designated walkways and renovated paths. Any soil eroding activity, for example, mountain biking is prohibited on the ridge. A motor vehicle must not be driven only on the roads reserved for motor vehicle traffic. The visitors are not allowed to pick plants or parts of plants (except for berries and mushrooms) and cause damage to them, disturb animals and their dwellings, as well as litter or perform other activities that have negative effects on the vegetation and animals' peaceful habitation. (The City of Tampere 2011.)

On the other hand, the following actions are permitted. It is allowed to take actions that comply with the management plan, build and maintain equipment and structures that are community based, and use motor vehicles for maintenance and renovation of the area. For schools it is allowed to use the territory for their Physical Education lessons. (The City of Tampere 2011.)

4 OBSERVATION RESULTS AND ANALYSIS

The author observed the environment of Pyynikki outdoor recreation area twice. While one of the visits was done on the weekend, on Saturday the 16th of February 2013, the other happened on the 20th of February, Wednesday. It was done on purpose in order to compare the amounts of visitors in different days. Moreover, the 16th of February turned out to be a winter carnival day and many people were eager to come to the observation tower with their children. There was a need to examine the situation on the regular day as well.

The additional sources of data were used during the research process. Official Internet pages and the pictures taken by the author's friends helped to receive the fuller image of the possible impacts on the area that were difficult to observe, for instance, the situation in summer or information about the vegetation.

This chapter shows the results of the observation done by the author and thus gives an answer to the first sub-question of this research: *What are the impacts of tourism in the nature area?* The results are classified according to the areas of impact described in Chapter 2 in the relevant theory. The areas taken into consideration are: air quality, geological resources, water quality, natural resources, vegetation and wildlife, and man-made environment (Rátz & Puczko 2002, 187).

4.1 Air quality

Nowadays natural environment everywhere in the world experiences a big scope of pollution. The most part of it is CO₂ emissions, which come in great amounts from all kinds of transport. (United Nations Environment Programme.) Quality of the air in Pyynikki area depends significantly on the amount of transport moving inside the area and CO₂ emissions this transport generates.

On the protected lands, driving a motorized vehicle is forbidden. However, there are several roads around the area, where one can freely drive a car. Pyynikintie, Palomäentie, Näkötorrintie and Tahmelantie (picture 2, page 19) are used regularly by the local people. Even during the week the traffic there is quite active, which means considerable amounts of emissions to the air.

There are several apartment houses, an office building and a hotel on site, which means more cars daily circling in the area. There is a parking space for hotel guests, which may be used by other visitors as well, so there is a good possibility to reach the area with a car. There are some parking places along the Näkötornintie for the visitors of the observation tower. They were all full on the 16th of February due to the winter holidays and a celebration (picture 3, page 25) but in the middle of the week, on the 20th of February, the road was nearly empty (picture 4, page 25). The author assumes that in summer time as well as during the weekends and holidays the amounts of visitors with cars increases in comparison with the working days.



PICTURE 3. Näkötornintie on the weekend (Photo: Olga Semenova 2013)



PICTURE 4. Näkötornintie in the middle of the week (Photo: Olga Semenova 2013)

One of the recent topics in modern world is noise pollution. Noise pollution is displeasing or excessive noise that may disrupt the activity or balance of human or animal life. The source of most outdoor noise worldwide is mainly caused by machines and transportation systems, motor vehicles, aircrafts, and trains. (Senate Public Works Committee.) The levels of noise in Pyynikki cannot be classified as excessive, as only car transport can maybe disturb some small animals living in the forest and people having their homes nearby. Maintenance work might bring some noise but the author does not believe it being destructive due to the short duration and irregular nature.

4.2 Geological resources

The main geological resource in Pyynikki is soil. It plays an important role in saving vegetation and natural environment of the area. Increased use of soil, for example, walking, biking or driving a motorized vehicle, may cause erosion and destroy vegetation. (The City of Tampere 2011.)

As it was mentioned earlier, soil management plan exists in order to protect the territory of Pyynikki and guide the visitors to the specially designated walkways. Cycling is prohibited in the forest but there are marked bicycle and pedestrian paths in the area (picture 5, page 26). Motorized vehicles are only allowed for renovation and maintenance work.



PICTURE 5. Pedestrian and biking path (Photo: Olga Semenova 2013)

There are built stairways on the slopes of Pyynikki ridge as well as renovated paths for the walkers. There is no maintenance of the stairs in the winter period (picture 6, page 27) but some of the paths are turned into skiing routes. There is a clear division of pedestrian and skiing routes, so that it is not allowed to walk over the ski-tracks (picture 7, page 27). It is not advised to walk along the forest paths but use the renovated paths instead, however, many people ignore this – many paths have their way through the forest in the snow.



PICTURE 6. The sign telling that there is no maintenance in winter (Photo: Olga Semenova 2013)



PICTURE 7. One of the ski-tracks (Photo: Olga Semenova 2013)

Many dog lovers have been observed in Pyynikki during the two days. All of them were responsible enough to keep their pets on a leash. Some people, however, used the forest paths to walk their dogs. The author assumes the situation is the same in summer time or there might be even more visitors if the weather is warm and sunny.

4.3 Water quality

Water quality refers to the chemical, physical and biological characteristics of water with respect to its suitability for a particular purpose, for example, drinking, swimming or fishing. Water quality is also affected by substances like pesticides or fertilizers that can negatively affect marine life when present in certain concentrations. (Diersing 2009.)

Lake Pyhäjärvi touches the area of Pyynikki. There is boat traffic over this lake during the particular season. One of the routes leads past Pyynikki as well. There is a possibility to get to the summer theatre with one of the boats.

Pyynikki has two beaches and in summer it is possible to go swimming and taking sunbaths (picture 8, page 28). If the water is warm enough or visitors are brave enough to swim, there is a certain impact on the water quality. Although the author does not believe the scope is big enough to take it into consideration.



PICTURE 8. Visitors at one of the Pyynikki beaches (Photo: Daniela Siegismund 2012)

Water quality of the entire lake should be examined in order to evaluate the impact in Pyynikki. However, this is the topic of another research. It must be said that the impact of tourism on the lake is obvious, as boat trips are quite popular among both locals and guests of the city. The scope of this impact is difficult to evaluate using only observation as a tool.

4.4 Vegetation and wildlife

Observation has been done in winter time, so most part of the plants and vegetation was covered with snow. The diversity of the forest trees was only available to examine but there was some information on the vegetation on the web pages of the city of Tampere.

There are over 300 plant species in Pyynikki. Many of them have been planted there by a man and also many have disappeared because of the excessive collecting. All in all, 18 species disappeared because of a man. One of the examples is a cowslip. In addition to that, there are some plant species that are close to extinction. (Tampereen kaupunki 2012.)



PICTURE 9. Pine forest (Photo: Olga Semenova 2013)

In Pyynikki, there grows 130-200 years old sturdy forest including some 40, 60 and 70 years old grove as well as younger plants. Predominant tree species is pine (picture 9,

page 29). Spruce finds itself significantly only in the Western part of the rocky area. On the lower slopes in the Southern part of Pyynikki one can find maple trees, rowans and grey alders. Little young, naturally born downy birch forest, except, birches, nearly disappeared from Pyynikki. It is partly because of fertilization influence. On the other hand, rowan is resistant to pollution, which makes it growing better in the area. On the Southern slopes, there are some larches planted in 1930's. (Tampereen kaupunki 2012.)

The height of the trees depends on their location. On the lower slopes the trees are 26-28 meters high. On the top of the ridge as well as on the Northern slopes the trees are a bit lower, around 16-18 meters high. Average density is 310 pcs/ha. The timber is the densest in the Eastern and Western parts of the ridge and the thinnest on the Southern lower slopes. (Tampereen kaupunki 2012.)

Although considerable part of Pyynikki seems to be wild, it can be seen from the flora composition that there is actually no wild ridge, rock and grove vegetation in the area anymore. Typical ridge vegetation, however, can be found close to the observation tower by the stairs going down to the South. The summer theatre, beaches and Rosendahl rocks in Pyynikki have been popular places for recreation in the city already for a long time. Numerous trees and bushes were planted to these areas. They went wild and mixed with the grove plants in some places. (Tampereen kaupunki 2012.)

4.5 Natural resources

Natural resources are something that can be used by a man and can be found within the environment. A natural resource may exist as a separate entity such as fresh water and air, as well as a living organism such as a fish, or it may exist in an alternate form which must be processed to obtain the resource such as metal ores, oil, and most forms of energy. (Rátz & Puczkó 2002, 187).

Natural resources of Pyynikki include, for instance, air, water, plants etc. Cutting trees was prohibited already long ago. According to every man rights, visitors are allowed to pick berries and mushrooms but not plans or parts of the plants. It is not allowed to disturb animals and destroy bird nests. All these rules can be found on the information board in front of the observation tower cafeteria in Finnish.

Littering is not allowed in the area. There are enough trash bins in different parts of Pyynikki. For example, along the Näkötorrintie the bins are installed in every 40-50 meters. The territory is overall very clean but it is impossible to control everyone, so some leftovers of not so much responsible visitors can be found in the area (pictures 10, 11, page 31). Sometimes even close to the trash bins (picture 12, page 32), which is not the question of poor management but of the decreased responsibility level of some visitors.



PICTURE 10. A piece of trash near Pyynikintie (Photo: Olga Semenova 2013)



PICTURE 11. A piece of trash near the observation tower (Photo: Olga Semenova 2013)



PICTURE 12. Trash bin and a piece of trash nearby (Photo: Olga Semenova 2013)

4.6 Man-made environment

Man-made environment, or built environment, refers to everything installed by a man within the nature environment (Rátz & Puczko 2002, 171, 202). There are many objects in Pynikki that can be classified as built environment. However, only two of them attract most of tourists coming to Tampere.

The two main visitor attractions are the observation tower (picture 13, page 33) and the summer theatre (picture 14, page 33). While the theatre is available only in summer period, the tower is open for the people all year round.



PICTURE 13. Observation tower in summer (Photo: Daniela Siegismund 2012)



PICTURE 14. Pyynikki Summer Theatre (Aamulehti 2011)

As the observation has taken place in February, it was impossible to collect the first hand data about the theatre. However, there is statistics taken from Visit Tampere and it shows the numbers of visitors over three years as follows:

Year 2009 - 46 663 visitors

Year 2010 - 40 344 visitors

Year 2011 – 23 442 visitors

The number decreased nearly twice in 2011 but still the amount is quite big. It surely has some impact in terms of the carrying capacity of the area.

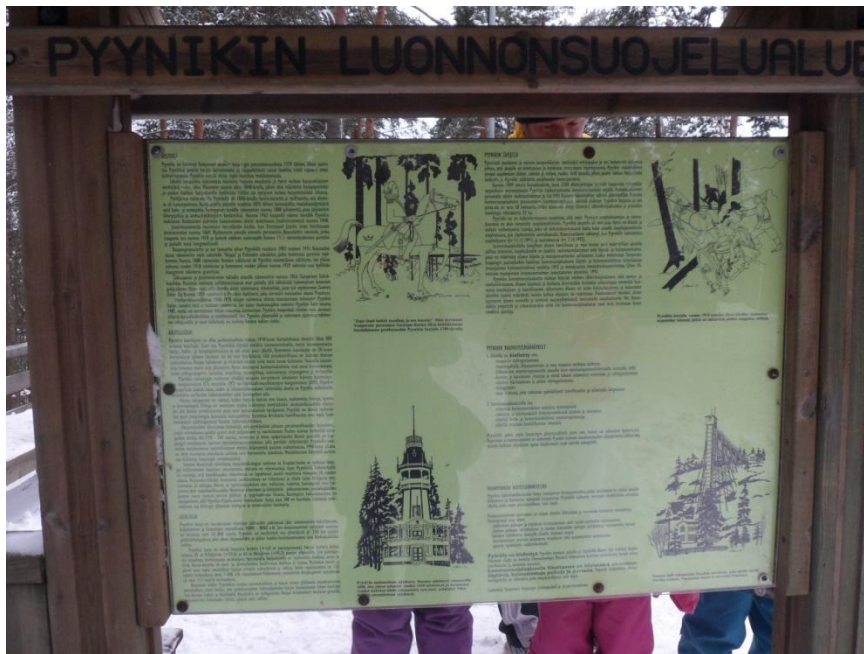
The observation tower attracts locals as well as the guests of the city. According to the little chat with one of the tower cafeteria workers, there are always visitors and the workers are always busy. The tower has a lot of visitors especially during holidays and celebrations (picture 15, page 34). It was quite peaceful in the morning in the middle of the week but the worker said the sun attracts visitors both in summer and winter. The sunnier the weather is the more people want to visit the tower. When the author left the tower, all the places in the cafeteria were already taken.



PICTURE 15. Winter Carnival on the 16th of February 2013 (Photo: Olga Semenova 2013)

The cafeteria is very small. There are only five tables and the room is not very big either. That is why on the weekend it was full and the queue stretched long outside the cafeteria, which is famous for its doughnuts. The author assumes in summer time it is even more difficult to get in.

Before the cafeteria, there is an information board, which shows the map of the area and tells about the history of the place and the protection regulations (picture 16, page 35). Everyone can freely take a closer look at it and be aware of what is allowed and prohibited in the area.



PICTURE 16. Information board near the observation tower (Photo: Olga Semenova 2013)

4.7 Evaluation of the results

Discovering the impacts is only half of the way. The analysis should be done in order to evaluate the nature and the scope of these impacts on the environment both natural and built. The theory of the environmental impacts of tourism is applied in this chapter to evaluate the results of the observation. According to this theory, there are four dimensions of the impacts, which are: global vs. local, direct vs. indirect, reversible vs. irreversible, and positive vs. negative (Rátz & Puczko 2002, 187).

Global vs. Local

The theory says that global impacts are those that can influence any human being on Earth, while local impacts appear on a definite territory (Rátz & Puczko 2002, 180). The impacts observed in Pyynikki are mostly of a local nature but also global ones appear to exist.

The most obvious global impact is CO₂ emissions to air. As there are several roads around the protected area, it is clear that there is also a definite number of cars circling daily in Pyynikki. As it was already mentioned, the traffic in Pyynikki is quite active. Locals use the roads daily to get to and from work, as well as move inside the city. There is one road leading to the observation tower, which can be freely used by the car owners. It is practically situated inside or very close to the protected area.

Air is not chained to one concrete place, so polluting air in one area can obviously influence the quality of air in whole. That is why impacts on the air caused by the traffic can be classified as global, so to say touching upon overall problem of air pollution on Earth.

All the other impacts, like mass tourism, littering, soil erosion, and saving vegetation are local, as they apply to the concrete area of Pyynikki. The impact of mass tourism is well seen on each area of impact, including, air, water, soil, vegetation, and man-made environment. It is closely linked to the carrying capacity of the place. However, it must be said that the amounts of visitors are not that critical to say that Pyynikki is overcrowded.

Littering might be a serious issue but it is well enough managed in the area. The bins are available for the responsible visitors and maintenance work is effective enough to fight the consequences of irresponsible behavior of the others. There is a management plan for taking care of soil erosion and saving vegetation, which is applied in Pyynikki. It must be said that local impacts are managed well in the area.

Direct vs. Indirect

It was already mentioned in the chapter describing theory that in case of a direct impact, the impact generator has a direct relationship with the factor affected. Indirect impacts may develop through 3-4 stages of change or even more. It is much easier to observe

direct impacts as they can be easily perceived by anyone. Indirect impacts may become clear over a certain period of time. (Rátz & Puczko 2002, 183-185.) Environment in Pyynikki experiences both direct and indirect impacts. The examples of those are presented below.

All the impacts that were physically observed by the author are direct. Different kinds of transportation and ways to get to the area directly influence the environment of Pyynikki. Cars are the sources of CO₂, while bus traffic and close to the city center location provide opportunities for decreasing the scope of air pollution. Littering may negatively affect nature in the area but waste management is able to effectively solve this problem.

Large amounts of visitors create a danger for soil and excessive walking may cause soil erosion. However, the specially built paths and stairways are a good decision in this case. There is also a certain danger to the vegetation in Pyynikki. The more visitors there are in the area, the greater the risk of collecting plants and parts of plants is. Those are only the examples of all the possible direct impacts. It must be said that all the impacts described in chapter 4 are of a direct nature.

Indirect impacts are difficult to perceive and observe physically (Rátz & Puczko 2002, 183). However, the author will try to assume them thinking in the first place of mass tourism impacts overall. The first thing that comes to one's mind is transportation impacts. Many people come to Tampere by air. It is well known nowadays that air transport is the biggest air polluter, which has indirect impact on the air quality in Pyynikki. Secondly, all the possible travel agencies and information centers are there to help tourists with the needed information and guidance. Brochures, booklets, info guides are a result of printing, using ink and paper, which again has an impact on the environment. Finally, the increased amount of people in the city requires the increased usage of resources and energy, as people eat at the restaurants, reserve rooms in the hotels and use local transport.

The stages of indirect impacts can be countless. On a global scale, any action in tourism industry needs energy and resources and can generate waste as well as cause pollution. All the units of the environment are linked between each other, so influencing one of them will cause impacts on the others as well. (Buckley 2004, 10.) The list of these impacts is very long to present it here.

Reversible vs. Irreversible

Reversible impacts mean that the original conditions or similar ones can be restored, while with irreversible impacts it is not possible. Irreversible impacts usually have more influence on the natural environment rather than on the built environment. Some of natural resources never restore or it takes too much time to do so. (Rátz & Puczkó 2002, 185-186.) Both kinds of impacts can be found in Pyynikki.

Among the irreversible impacts the author would like to highlight plant species extinction and air pollution. Although it is forbidden to collect plants and parts of the plants, the author assumes there might be visitors who ignore or do not know about this rule. As it was mentioned before, 18 species have already disappeared from Pyynikki because of an excessive collecting and there are still species that are close to extinction (Tampereen kaupunki 2012). There is, of course, a possibility that not only tourists can collect plants in the forest but local people, who come for a walk with their family, friends or pets, are able to do so. Although there is an information board close to the observation tower, the rules are written only in Finnish. Foreigners who do not speak Finnish might not be aware of some rules applied in Pyynikki and monitoring every visitor in the natural area is impossible.

The author places air pollution among the irreversible impacts, although practically the air is not that polluted nowadays to think of this impact as an irreversible one. Air pollution is a global problem nowadays. Who knows, maybe one day the air becomes unsuitable for breathing and there will be no possibilities to restore it. There will be no man to care about it though.

All the other impacts observed by the author are reversible ones. Waste is managed well in the area, as well as the soil erosion. There is a soil management plan to prevent destruction of soil and damaging vegetation and wildlife in Pyynikki. Designated paths and stairways facilitate this purpose. It is forbidden to cut trees, so this natural resource is safe in the area. Built environment, like the observation tower, the theatre and sports facilities are easier to restore than natural sceneries and biological diversity.

4.7.4 *Positive vs. Negative*

Positive vs. negative is the most common dimension used in the analysis of the impacts. It is quite easy to classify the impacts according their positive and negative nature, although some of them may be both at the same time, as their influence cause both pleasant and unpleasant consequences. (Rátz & Puczkó 2002, 186-187.)

Negative impacts are easier to observe due to their direct nature. They usually require actions to be taken in order to decrease or eliminate negative influence. This is partly why negative impacts are the ones to be the most spoken of. (Rátz & Puczkó 2002, 186-187.) The author observed several negative impacts on the environment of Pyynikki.

First of all, it is the considerable amount of cars in the area and quite active traffic. As a consequence, there is air contamination and pollution. Secondly, big amounts of visitors, especially during the weekends, holidays and summer period, influence soil and vegetation. Not all the visitors obey the rules and use only the designed paths and stairs. The third negative impact is littering. Although there are trash bins in the area, some visitors might not be responsible enough to throw their trashes directly into the bin.

Noises from the traffic can also be a negative impact. They can disturb small animals living in the protected area of Pyynikki. Collecting of plants is a negative impact, as it may lead to the extinction of species. However, there is no evidence gained by the author that this kind of visitor behavior happens. Finally, overcrowding is a negative consequence of mass tourism. It mostly refers to the built environment in Pyynikki. For example, it is very unpleasant to visit the observation tower in peak times, when it is even impossible to get in.

Positive impacts are usually indirect, that is why it is more difficult to follow them up (Rátz & Puczkó 2002, 186-187). However, there are clearly something positive in Pyynikki as well. The first positive thing is awareness. When people are coming to Pyynikki, they have a possibility to learn more about nature and its conservation. The information provided in and nearby the observation tower raises awareness about the environmental problems and make visitors think carefully about their behavior and be more responsible while having rest in the recreation area. The only point to be said is adding more information in English, so the foreign guests of the city can also learn something about nature protection.

Another positive impact relates more to human health and well-being. In Pyynikki the visitors have possibilities to do sports and take care of their health. There are several sports grounds and facilities for exercising. In summer everyone can do jogging on the designed paths and in winter they turn into ski tracks for ski lovers. People who take care of their health usually think of the environment overall. They try to be more responsible, avoid littering and use environmentally friendly goods and techniques.

The third impact refers to the economic welfare. Money gained with the help of tourism can be used to maintain and keep the nature safe. Management of the recreation area of Pyynikki requires economic resources, which can be drawn from the profit generated by tourism.

5 ENVIRONMENTAL SUSTAINABILITY OF TOURISM IN PYYNIKKI

In this chapter the author tried to answer the research question presented in the very beginning of this paper. Principles of sustainable nature tourism in protected areas for impact assessment developed by Metsähallitus facilitate this process.

The main question of the present research was: *Is tourism in Pyynikki environmentally sustainable?* The analysis of the impacts gave the image of the situation in the area. The impacts are all different, global and local, direct and indirect, reversible and irreversible, positive and negative. They can be observed in all the areas of impact including air, water, geological resources, natural resources and man-made environment. So can Pyynikki as a tourist destination be called environmentally sustainable? Does tourism help or disturb using all kinds of resources in a responsible manner and save them for the future generations? The author tried to find the answer to these questions with the help of the principles of sustainable nature tourism in protected areas (Metsähallitus 2010). The same principles also help finding the answer to the second sub-question: *How is sustainable development supported in order to avoid negative influence on the environment?*

There are three of the principles that touch upon the environmental aspect of sustainability. They are as follows:

1. Natural values are preserved and all activities promote nature conservation.

Nature is the primary attraction in Pyynikki. Whether visitors want to enjoy the breathtaking views, take a walk in the forest or watch the beauty of the Northern nature, Pyynikki gives this opportunity to them. They can learn about the nature and its conservation from the information point in the observation tower. In addition to that, there is a lot of easily accessible information on the Internet. As part of Pyynikki is a protected area, appropriate actions have been taken in order to guide the visitors and protect the fragile nature. For example, there are special trails and paths in the forest. Facilities are designed very well, so that the most beautiful natural areas of the ridge are left undeveloped. There are several observation points on the ridge and the tower itself provides an opportunity to enjoy the views not disturbing the scenery of the surroundings. Erosion and other impacts are monitored,

with corrective measures taken as needed. There is a soil management plan that helps to prevent soil erosion and protect the vegetation.

However, it is difficult to really ensure that visitors use only the renovated paths and stairways, do not leave waste in the forest and do not collect the plants. The important information is provided only in Finnish, which leaves foreign visitors uneducated about the area protection. The amounts of visitors vary depending on a season and day of the week. There are quite many people in Pyynikki on holidays. The area close to the lake is developed well enough and it has its influence on the protected area.

All in all, it must be said that natural values are truly preserved but not all the activities promote nature conservation. This principle is only half applied in the area.

2. The environment is subjected to as little pressure as possible.

Real effort is taken to avoid damage and disturbance of the environment in the area. Soil management plan has been mentioned already many times, rules and regulations to guide visitors also applied in the area. Trash bins are installed in all the necessary places to avoid littering. Visitors are given all the possible information on the appropriate behavior in the protected area. Using motorized vehicle is forbidden in all the cases except maintenance work. The area is close to the city center, so visitors are encouraged to use bicycles or even walk to Pyynikki. Two public busses pass by the area and there is limited amount of parking places, which discourage using own car to come to the area.

Nevertheless, it cannot be said that emissions are minimized. There are still several roads around the area, and the traffic is quite active, which means CO₂ emissions from cars pollute the air in the forest as well. Many things are left to visitors' own responsibility, like not littering and leaving traces behind them.

3. Visitors increase their understanding and appreciation of nature and cultures.

Information about local culture and nature conservation is available by the observation tower. It is quite attractively presented but only in Finnish, which may cause problems with those visitors who do not speak this language. The author has

not observed any opportunities to contribute to the management and protection of the area but it is possible that deeper research was needed to be done about it.

The analysis above showed that many actions have been taken in order to reach the sustainability in the area. However, the principles are fulfilled only partly. There are still challenges in some aspects, so the place cannot be classified as fully environmentally sustainable.

It is also important not to forget that the goal of sustainable nature tourism is to provide visitors with valuable experiences in natural surroundings in fully sustainable ways (Metsähallitus 2010). It must be said that this principle is fulfilled because there is a considerable range of activities in Pyyrikki as well as suitable facilities for nature observation, being outside and enjoying the scenery.

In the beginning of this paper, it was mentioned that tourism cannot be fully sustainable, as every industry has impacts, but it can move towards sustainability as close as possible. It must be said that a great scope of work has been done in Pyyrikki and the results are very positive. The visitors are encouraged to leave their cars at home, to use the specially designed paths, not to litter, and not to damage soil and vegetation of the place. The question now is in every man's personal responsibility and awareness of the environmental issues as well as technical progress, which will facilitate usage of alternative energy sources and effective nature conservation.

6 CONCLUSION

This research was conducted in order to study the environmental impacts of tourism in Pyynikki outdoor recreation area. Pyynikki is quite popular among the tourists coming to Tampere because of its picturesque views and beautiful nature. Therefore there is a certain danger to the natural environment of the area.

Different areas of impact, such as air and water quality, natural and geological resources, vegetation and wildlife, as well as man-made environment, were examined in order to reveal the existing impacts. This was done to find out, what kind of influence the area experiences from the tourists and local inhabitants.

Observation of the area was done in February 2013 to collect the primary data for the analysis. Pictures were taken as an evidence of the observed facts. As the research was conducted in winter time, it was decided to use the pictures taken by the author's friends in summer time as well.

The theoretical background of environmental impacts of tourism was used to analyse the results. With the relation to theory, the four dimensions of the impacts were analysed: local vs. global, direct vs. indirect, reversible vs. irreversible, and positive vs. negative. This gave an overall image of the situation in Pyynikki. Additionally, principles of sustainable nature tourism in protected areas developed by Metsähallitus were used to answer the main research question: is tourism in Pyynikki environmentally sustainable.

The results of the observation showed that there were clear impacts in each area of impact. The biggest and the most harmful impact, in the author's opinion, were CO₂ emissions to air due to the considerable amount of cars circling daily in the area. However, the author understands that it is difficult to control such an impact. Among the other impacts, there were littering and damage of soil. These were negative impacts but there were positive as well. Raising awareness about nature conservation, increasing visitors' well-being, and collecting finance that can be used for maintenance and protection were all of a positive nature.

It was obvious that negative influence is managed well in the area. There are management plans to protect soil and vegetation. Waste management is working

successfully as well. The nature is taken care of and visitors are encouraged not to harm the environment.

The author came to a conclusion that tourism in Pyynikki cannot be classified as environmentally sustainable one. However, many actions have been already taken in order to move towards sustainability. The question now is in every man's personal responsibility and awareness of the environmental issues as well as technical progress, which will facilitate usage of alternative energy sources and effective nature conservation.

The aim of the thesis was to find out, if nature tourism in Pyynikki was environmentally sustainable one. The author believes that she succeeded to comply with this aim. The impacts of tourism were studied carefully and after the analysis the answer to the research question was given.

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