LATVIJAS UNIVERSITĀTE

HUMANITĀRO ZINĀTŅU FAKULTĀTE

LATVIJAS PIEKRASTES PAŠVALDĪBU ATTĪSTĪBAS STRATĒĢIJAS UN TO IETEKME UZ BALTIJAS JŪRAS VIDES AIZSARDZĪBU

MAĢISTRA DARBS

Autors : **Agnese Ančupāne**

Studenta apliecības numurs : aa10106

Darba vadītājs : Doc. Kristīne Āboliņa

RĪGA 2016

UNIVERSITY OF LATVIA
FACULTY OF HUMANITIES

DEVELOPMENT STRATEGIES OF LATVIAN COAST MUNICIPALITIES AND THEIR IMPACT ON SAFEGUARDING THE ENVIRONMENT OF THE BALTIC SEA

MASTER`S THESIS

Author : **Agnese Ančupāne**

Student ID card nr. aa10106

Scientific advisor: Ph. D. Kristīne Āboliņa

RIGA, 2016

Anotācija

Šī pētījuma mērķis ir analizēt 17 piekrastes pašvaldību (pilsētas: Jūrmala, Liepāja, Rīga, Ventspils un 13 novada pašvaldību : Carnikavas, Dundagas, Engures, Grobiņas, Limbažu, Mērsraga, Nīcas, Rojas, Rucavas, Salacgrīvas, Saulkrastu un Ventspils) attīstības stratēģijas, tā kā šīs pašvaldības var tiešā mērā ietekmēt piekrasti un jūru.

Lai pārbaudītu izvirzīto hipotēzi – *piekrastes pašvaldību attīstības stratēģijas ir fokusētas uz prioritātēm ,kurām ir potenciāls nodarīt kaitējumu Baltijas jūras videi* – tika pielietotas kvalitatīvās, kvantitatīvās, aprakstošās un salīdzinošās metodes.

Izstrādājot maģistra darbu, tika secināts, ka piekrastes pašvaldību attīstības stratēģijās vides jautājumi, īpaši tie, kas tiek uzskatīti par svarīgiem starptautisko organizāciju kontekstā, ir maz vai vispār nav pieminēti. Turpmāk tiek secināts, ka piekrastes pašvaldību attīstības stratēģijas tiešām fokusējas uz prioritātēm, kurām ir potenciāls nodarīt kaitējumu Baltijas jūras videi.

Atslēgvārdi: piekrastes pašvaldība, attīstības stratēģija, vides aizsardzība, Baltijas jūra

Abstract

Theobjective in this study is to analyze the development strategies of 17coastal municipalities (four cities: Jūrmala, Liepāja, Rīga, Ventspils, and 13 areas: Carnikava, Dundaga, Engure, Grobiņa, Limbaži, Mērsrags, Nīca, Pāvilosta, Roja, Rucava, Salacgrīva, Saulkrasti, Ventspils), because they can directly affect the coast and the sea.

Qualitative, quantitative, descriptive and comparative methods are used to examine the hypothesis - development strategies of coastal municipalities are focused on priorities that have potential of harming the environment of the Baltic Sea.

In this master thesis it is argued that in almost all development strategies of coastal municipalities' environmental issues and especially those considered by international organizations are poorly or not at all mentioned. It is further argued that development strategies of coastal municipalities are indeed focused on priorities that have potential of harming the environment of the Baltic Sea.

Keywords: coastal municipality, development strategy, environment protection, Baltic Sea

TABLE OF CONTENT

Introduction

Baltic Sea region is highly dependent on the Baltic Sea that is providing countries around it with resources, job possibilities, also with leisure opportunities and other important things. In order to have healthy Baltic Sea and the possibility to use it in the future, there is an urgent need for sustainable use of the sea and the land near it (beaches, dunes). For coastal municipalities sea can be seen as a resource that, if properly used, can bring more finances to it. There is wide range of possibilities that sea can offer, wise management of these resources need to take place, if municipalities fail to do so, actual gain out of these resources can be less visible than the harm done to the coast and the Sea itself. Because Baltic Sea is one of the most polluted seas in the world, there is a need for good development planning that can help maintain the fragile sea. As Latvia is one of the countries that have the border with Baltic Sea, it is essential to look into this topic in our country.

Throughout history Baltic Sea was essential for people living in territory of Latvia. "When looking at the settlement map of Latvia, it is noticeable that the Western coastline of the Gulf of Riga is more densely populated than other parts of the Latvian coastline. Locals found the Western Coast of the Gulf of Riga as the most appropriate for their living, sheltered from the dominating Western winds that provided more trouble for residents of the Baltic Proper or Eastern Gulf of Riga."[1] Nowadays the situation is quite similar – people tend to either live near the sea, or recreate near it. Nevertheless Latvia is a small country, compared to other found in Baltic Sea Region, the impact that can be made upon environment needs to be evaluated and researched in prism of actions foreseen in strategies of local municipalities.

Taking all this into account theme "Development strategies of Latvian coast municipalities and their impact on safeguarding the environment of the Baltic Sea" was chosen. It is still an urgent topic because nevertheless many international organizations (such as HELCOM – Baltic Marine Environment Protection Commission – Helsinki Commission, European Union and others),as well as local governments have raised the awareness of the issue, the improvement of the situation still needs to take place; international organizations have made action plans, introducing biggest threats, future priorities and possible solutions. It is also topical because many public initiatives that have raised the awareness of the society. Every country and it`s future plans are important for seeing a bigger picture. Nevertheless Latvia is one of the smallest

[11]A. Ruskule, et. Al., Baltic Environmental Forum, *See the Baltic Sea, Unique assets we share*, 2009,pp.57.

countries in the Baltic Sea region, it still can have an impact on environment of the sea by improper planning or resource overuse.

Theobjective in this study is to analyze the development strategies of 17coastal municipalities (four cities: Jūrmala, Liepāja, Rīga, Ventspils, and 13 areas: Carnikava, Dundaga, Engure, Grobiņa, Limbaži, Mērsrags, Nīca, Pāvilosta, Roja, Rucava, Salacgrīva, Saulkrasti, Ventspils), because they can directly affect the coast and the sea. By analyzing the planned activities in these municipalities, conclusions on future perspectives and possible threats for the environment will be made. The main reason for this research is to find if there is coherence between development strategies, problems that the Baltic Sea is now facing and action plans made by HELCOM and Baltic Sea action plan made by European Union.

Tasks of this study are:

1. To identify threats to the Baltic Sea brought by human activities and climate change in and near the coastal areas and to find possible solutions for these human and climate induced problems.
2. To analyze available literature on such topics as 1) coastal and dune maintenance, 2) human activities, 3) tourism impact, 4) climate change and erosion.
3. To analyze all 17 coastal municipalities and their foreseen activities and set priorities defined in development strategies that can influence (in both positive and negative way) the environment of the Baltic Sea.
4. After obtaining information available in literature and international documents on the issuesthat can have an impact on the Baltic Sea, choose the priorities by which 17 development strategies of coastal municipalities will be analyzed.

The subject of master thesis is coastal municipalities. The object of master thesis is the Baltic Sea and its coast.

HYPOTHESIS:

Development strategies of coastal municipalities are focused on priorities that have potential of harming the environment of the Baltic Sea.

Methods used to examine the hypothesis are as follows:

1) Qualitative research method (using case studies of coastal municipalities in Latvia) - by studying specific municipalities and their development strategies,observations and conclusions regarding potential effect on environment of Baltic Sea will be made.
2) Descriptive method will be used to describe data obtained on all 17 coastal municipalities, factors and priorities that can influence the environment of Baltic Sea and the coast.
3) Analysis of available literature, documents and initiatives (HELCOM, EU) to build a framework of contemporary problems that Baltic Sea is facing.
4) Comparative method will be applied in concluding chapter that will sum up information on all 17 development strategies of coastal municipalities.
5) Quantitative method will be used to summarize available data on municipalities (number of inhabitants, available territorial area etc.)

The content of this study consists of introduction, three main chapters and concluding remarks. The first chapter offers information on theoretical framework of this research, presents description of threats that can influence the health of the Baltic Sea and proposes possible courses for future actions.

The second chapter focuses on international context for the issue of safeguarding the Baltic Sea. This chapter examines two main international documents made by HELCOM (Baltic Marine Environment Protection Commission – Helsinki Commission) and European Union. This section of the thesis provides information on priorities and areas proposed by international political actors.

The third and final chapter display analysis on priorities foreseen in development strategies of all 17 coastal municipalities in Latvia and their possible future influence on the Baltic Sea and it`s coast. Development strategies are analyzed through 6 priorities, chosen by the study author after obtaining theoretical and international context information on the issue.

Conclusions are drawn upon collected literature and resources available on the topic of safeguarding the environment of the sea and author`s empirical findings and observations.

1. Core pressures and possible solutions for maintaining the coast of the Baltic Sea

In order to understand contemporary situation regarding Baltic Sea and it`s coast, theory and information on such topics as dune formation and maintenance, human impact, climate change and tourism and it`s possible impact on the environment will be examined.

Latvia is a country that has quite long border with the Baltic Sea. "The total length of coastal zone is 496,5 km, that mostly consists of sandy beaches and dunes. In the areas of sand accumulation beyond the beach, 1–4 m high predunes with typical vegetation have formed."[2]Further in this chapter topic regarding dunes and the coast will be examined. Author of this study considers dunes to be primarily important in case of 17 coastal municipalities. If water of Baltic Sea can be influenced also by other countries around it, dunes and coasts are of primary importance for municipalities that have a border with the sea.

There are three main problems, mostly accountable for Baltic States (Lithuania, Estonia and Latvia): "1) absence of overall national legislation specifically for coastal zone planning, the absence of a legal definition for the coastal zone, 2) problems of vertical integration between governmental levels and administrations, 3) weak co-operation and communication between various levels of government and a lack of integration of sectoral interests at a local level."[3] This can be explained by the fact that previously all three Baltic States were incorporates in USSR and the environmental issues back then were not the top questions, so these countries have very little experience in the field. There is enough money spent on environmental issues, but the result is not sufficient.

Many theoreticians have written about problems that coastal zone is facing. If we look from theories perspective then "one of the largest threats to the sustainability of the coastal zone is the growth in coastal populations. Coastal population growth increases demand for a continuing supply of clean water, waste disposal, public health, food and protection from natural disasters. There are also increased pressures on ecosystems from recreation and tourism, and from the infrastructure needed to accommodate these in the form of roads, bridges, parking lots

[2]CentreforClimate Adaptation, retrieved from : http://www.climateadaptation.eu/latvia/coastal-erosion/
[3]Ibid.

and sewers."[4]Previously mentioned activities are a part of human induced pressures that can be brought upon the coastal and sea ecosystems. It is not necessary the problem coastal municipalities in Latvia are facing, but deeper analysis will be made in practical part of the research.

Some studies have shown that if we speak about coastal pollution "municipalities account for almost half the number of pollution problem areas around the Baltic Sea. Sewage and wastewater treatment are the main issues for this source of pollution."[5]Old sewage systems can have additional cause for eutrophication problem that Baltic Sea is facing right now. Municipalities and other communities have a tendency to grow. In case of municipalities, there is an interest in acquiring more inhabitants, so new houses are built and more pressure on old sewage system is brought. Later in the chapter focus will be brought on many other reasons that are accountable for pollution and eutrophication.

Further in the chapter information on dunes and the coast, climate change and erosion, possible tourism impact and pressures from human activities will be discussed.

1.1. Importance of sand dunes formation and their maintenance

This sub - chapter will be dedicated to information on sand dune formation process, possible impacts brought by human activities and possible activities that can help to protect these formations.

Sand dunes are really a unique coastal land form.To understand possible challenges regarding maintaining the dunes and the coast in case of Latvia, basic information on formation of dunes will be provided. „These land forms are made up rather by wind than the moving water. For a healthy beach/dune system, the delivery of sand to the beach needs to exceed the sand lost to the dunes."[6] So basically with this is said that if the wind is helping to build the dune, it can harm a beach, because only a small portion of sand is returned to the beach by waves. Dunes are considered to be of a great importance for the sea ecosystem. In Peter W. French book *Coastal Defence* author argues that "dunes represent a vital part of the coastal defenses of many sandy coastlines. They represent a barrier (similar to sea wall) between the sea and the land, there also

[4]J. Duxbury, S. Dickinson, Principlesforsustainablegovernanceofthecoastalzone: Inthecontextofcoastaldisasters, EcologicalEconomicsJournal, Voulme 63, issues 2-3, pp. 319.
[5]Introduction : Baltic Sea overview, Coastal Guide, retrieved from : http://www.coastalguide.org/icm/baltic/
[6]Peter W. French, *Coastal Defences: Processes, Problems, Solutions*,Routledge, 2001, pp. 215.

are embryo dunes that are dynamic and are able to supply sand to the beach when it is needed yet store it when not. "[7] The reason why dunes are of great importance is that they can carry out its own beach recharge.There are many phases for the dunes, they are not only forming, but they also can erode. "During storms dune faces will experience erosion by waves. This is not an immediate management problem in a short term. During the summers, while wave activity is usually lover, most of this sediment is blown back into the dunes."[8] Sometimes the activity during summer is lower than the one during storm or wintertime, and then this is a call for a long term solution. Dunes are sensitive and fragile formations that need to be protected, coastal municipalities need to plan recreational activities in a careful and clever manner, so dunes could be stable and acquired.

There are some activities that can help with maintaining of sandy dunes - the vegetation. "Plants that are growing in dunes are not dependent on inundation of sea water for stability; prime controls are the ability to withstand desiccation and poor soil. Vegetation is vital for the dunes, firstly by root system that is binding sediment, and secondly, facilitating the build up of dune sediment by wind baffle."[9] If the sandy dunes would be just dunes without vegetation, they could be easily destroyed and there would not be a barrier between the land and the sea. In some places people do not truly understand the necessity of vegetation on dunes or the necessity of dunes itself. "Historically people have seen the vegetation on the dune as separate from the sea and so alternative uses of these resources is made – mostly forestry, housing, sand mining or amenity uses (such as golf courses)."[10]So the human activities can be harmful and sometimes helpin the process of erosion of the dunes. It is necessary to understand the true value of dunes and the protection or at least banning of abusive utilization should take place. The Sea, the beach and the dunes must be seen as a whole organism.

In the book *Coastal Defences* written by Peter W. French, four types of impact on the dunes are selected: "1) *conversion* that includes those methods of exploitation which involve changing vegetation types (by aforestration, farming or golf course construction), or the nation of dunes themselves (development or urbanization). 2) *removal* where sand is removed for other uses, such as building or mining. Dune profiles can also be altered in order to facilitate access or provide the

[7]Peter W. French, *Coastal Defences: Processes, Problems, Solutions*,Routledge, 2001, pp. – 218.
[8] Ibid, 218
[9] Ibid,pp.216
[10] Ibidem.

sea view for landward development. 3) *Use* of dunes that include activities utilizing the current resource. Frequently recognized are amenity usage, water extraction and conservation measures. 4) Impacts on dunes from beyond dune environment, such as reduced sediment supply due to coastal defenses, will also induce net dune decay and potential future defense problems via the beach sediment budget."[11] This first type of impact shows that changing vegetation in most cases could be lethal in sense of dunes and dune protection. As was mentioned before – dunes are changeable substances, if we make them static, in a long run these sites will not have any chance of recovery. The second type of impact can be easily seen in many beaches around Latvia – many walking tracks are made of wood and other materials, there are also some parking places built in order for tourists to leave their cars closer to the sea.The third type and fourth type also points out the use of existing resources (sand beach, dunes, sand, territory near the sea etc.) for amenity uses – for people`s well being. It is understandable that we can not close all the dunes and prohibit human access to them, although strong human – induced change can be seen all over the beaches.

Recreational activities are often linked to the sea and beaches, and also people that get to the sea by car. One of the biggest problem to the sand dunes and it`s vegetation, is use of recreational vehicles. "Some recreational vehicles – such as motorcycles, 4 – wheel drive vehicles, and vehicles with large wide tires – driven up and down dunes, often at considerable speed, cause displacement of sand and destroy dune vegetation."[12]While people may think that driving a recreational vehicle on the beach does not leave any pressures on the beach, in reality the situation is different. There are many sea access points where there is no forbidding sign for these activities. In a long run sand dune will not have the power to grow bigger or it will cease to exist. In combination with climate change impact and erosion on the dunes, recreational vehicle use can help in damaging the ecosystem.

Trampling also is one of the little problems that sand dunes face, although it is considered to have only slight impact on the dunes, it is still an activity that should be controlled. "The biggest affect on fauna and flora on dunes can be seen near access points, such as car parks."[13]There are some municipalities around Baltic Sea that clean popular beach areas in order for tourists to have more pleasure while gaining the sea experience. "This is because decomposing wrack, and algae, with associated odors and flies, are considered a problem for

[11]Peter W. French, *Coastal Defences: Processes, Problems, Solutions*,Routledge, 2001, pp. - 219
[12] A. McLachlan, A. Brown, *The Ecology of Sandy Shores, Second Edition*, Elsevier, USA, 2006, pp. 284.
[13] Ibid, pp.286.

beach users. Mobile beach cleaning machines are employed on some tourist beaches, they clean not only the waste that people left behind, but also wrack, sand and living organisms."[14]Human liter needs to be taken care of, because in many cases plastic bags and other things, that people leave behind, may cause serious effect on the beach or for the sea.

Previously in this chapter focus was brought upon things that can do harm to the dune system. Later on information on dune protection and rehabilitation will be discussed. "The simplest solution would be to prevent any usage of dunes and allow them function as natural systems. In reality this ideal is not going to happen because historical uses and its linkage to human development and activities. "[15] Beaches and dunes are used for recreational purposes, for economic purposes (ports, cafes etc.), building purposes and others. Coastal municipalities tend to earn money with possibilities that closeness to the sea can give, because of this, prevention of all usages of the dunes and the coast is impossible. If municipality has border with the sea, it is a resource that is frequently used.

One way how to help the beach and its ecosystem could be by beach nourishment. It can be considered as soft engineering alternative. In the book *The Ecology of Sandy Shores* authors write that soft engineering is used to: "1) protect existing buildings and infrastructures from wave attacks; 2) improve beaches for recreation; 3) create new natural environments; 4) eliminate detrimental effects of shore protection structures by burying them; 5) retain sediment volumes during sea level rise."[16] Although it is a soft engineering, many countries use this initiative to help maintaining the beach. In many cases it has helped to maintain the fragile ecosystem. "Bypassing operations move sediment from one side of a barrier to other by pumping sludge in a pipeline or by trucking. Such operations remove sediment from accreting beaches and deposit it on nearby eroding ones. Beach nourishment is best done as a series of small additions of sand at one to two year intervals rather than as a single major episode."[17]It was previously mentioned that dunes are moving elements and sand is going both ways (to the inland and to the sea), so if a major episode of sand addition would be made on the beach and dunes, it could have rather unforeseen effect.

[14]A. McLachlan, A. Brown, *The Ecology of Sandy Shores, Second Edition*, Elsevier, USA, 2006, pp.286
[15] Ibid, pp. - 231
[16] Ibid, pp.294.
[17] Ibid,pp.294- 295.

In Latvia there is a brochure made for coastal municipalities, it consists of 28 pages. In *the guidelines for seashore erosion reduction* some recommendations for coastal municipalities and owners of the land are made. In case of Latvia 4 types of anti- erosion solutions are proposed. The first one is "non – intervention solution. It proposes that all geological processes that are happening need to occur in natural way, and if before these processes have been somehow disrupted, then there is a need to make these processes natural again, without anthropogenic disruption. It is the best solution for further coastal stability. This strategy is also suitable in cases of sediment movement deficit created by port external hydraulic structures where there is no possibility for artificial deficit compensation."[18]It is argued that non – intervention sometimes is better than heavy intervention in seashore ecosystem. There are cases when this solution will not work, so other types of preventive measures should take place. For example, the second proposed solution that is *green* measures. "Three types of green measures are proposed in the brochure: 1) dune vegetation plantings; 2) reduction of anthropogenic load caused by recreation and 3) conservation of existing natural resources in coastal zone."[19]The third type is solution without construction. By this it could be understood as "manipulation with sediment material. The deficit is artificially supplemented in needed area. Drifting of the sand to the beach by special water vehicle costs from 1 – 10 Euros for $1m^3$, the same activity with on land vehicles costs 2 times more. This kind of solution is evaluated as divisive because of need to for constant situation monitoring and possible damage to biological diversity. Good aspect is the growing possibility for recreation."[20] The fourth solution is the most costly one – the building of waterworks constructions. "it could be building of mole, pear gabions (*mattress* made of wire and stone), concrete stacking etc. Costs varies from 1000 Euros for 1m to 10 000 Euros for 1 m."[21] The last solution is the most costly one, and deeper research is needed for understanding if waterworks construction is needed in case of any coastal municipality, because it also can damage and affect the scenery.

In conclusion, it must be said that dunes are very vulnerable organisms, and it is essential to take care of them either by nourishing or eliminating the threats, such as pollution, human recreational activities and development that is associated with expanding human population, towns, harbors etc.Because of connection between coast and the sea, coastal protection can help

[18]*Vadlīnijas jūras krasta erozijas seku mazināšanai*, Latvijas Universiāte, 2014, pp.13.
[19] Ibidem.
[20] Ibidem.
[21]Ibid, pp.14.

in maintaining the good health of the sea itself. There is a need to have good governmental law in order to maintain the beach in environmental way.

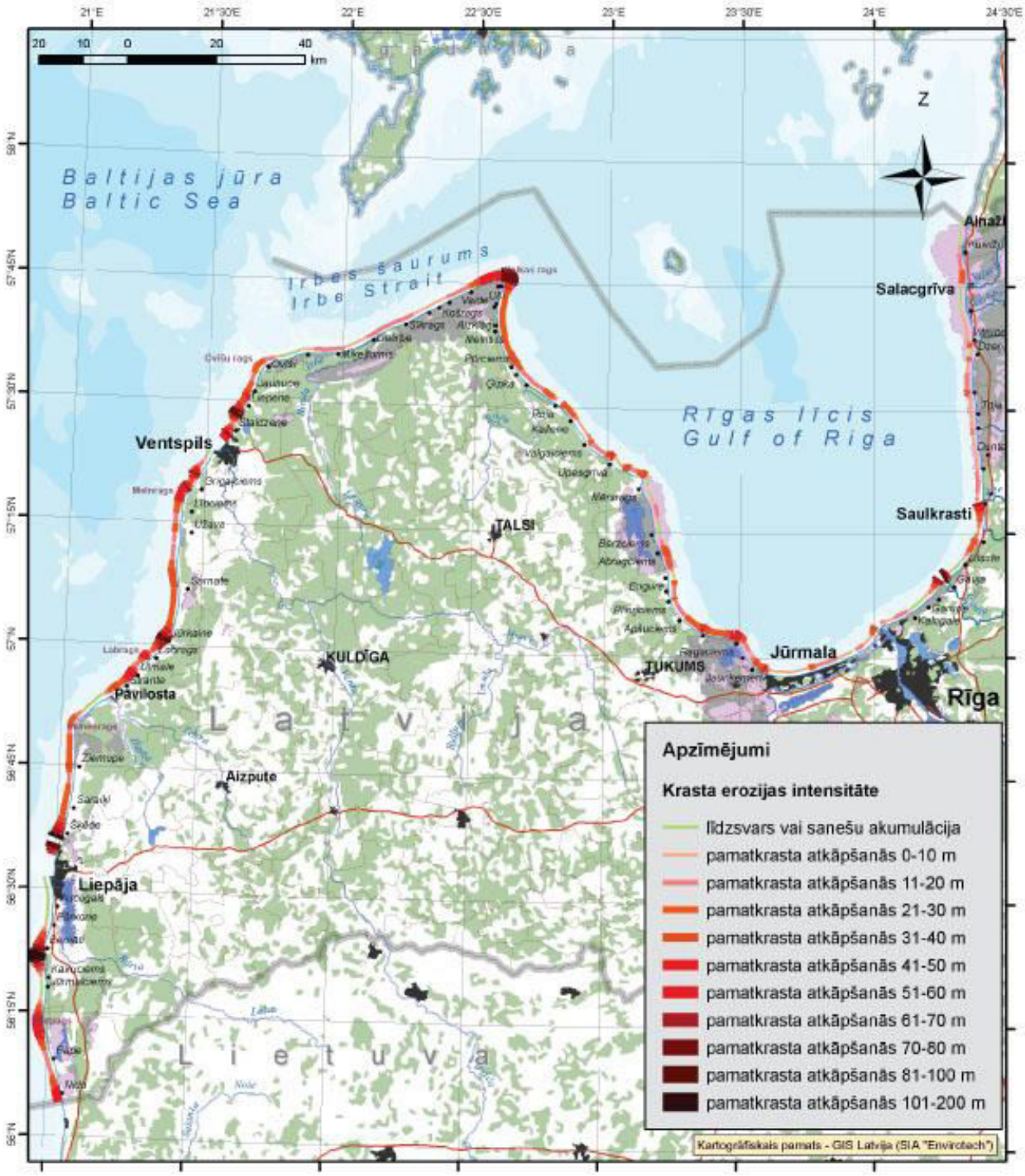
1.2. Impact of climate change and coastal erosion

The climate change topic is a widely researched phenomenon all around the world. Researches want to understand how much emission do countries really produce, how to limit this process etc. In case of the Baltic Sea, it is important to find out nowadays erosion levels and future trends. "Along the open Latvian Baltic seacoast, the recession has exceeded 50-60 m (up to 200 m) during the last 50 -60 years. Only along the coast of the Gulf of Riga, coastal erosion is less prominent. In general, coastal erosion has significantly increased due to severe storms during the last 15 years. The rate of coastal erosion during any single storm has increased, averaging 3 – 6 m with the maximum reaching 20 m."[22]The main contributors to coastal erosion are seasonal storms, which are happening more frequently due to climate change. "Intensification of erosion along South Eastern coast of Baltic Sea is associated with the increasing trend in annual (winter) storminess over the second half of the last century, simultaneously with less days of ice cover in winter."[23]Due to climate change, Baltic Sea now has less days of the sea covered in ice, this also helps the erosion processes.

Some studies were made (Anthropogenic climate change scenarios etc.), regarding Latvia and possible climate changes in the future. Numbers provided are not very promising and show that in the future the climate will be getting warmer."The climate scenario predicts a 3 – 3, 5 Celsius degree rise in the air temperature and a 20 – 25 % increase in precipitation. Groundwater levels in the lowest coastal zone of Riga Bay could raise by 50 – 70 cm. Risk of floods would increase in the lower reaches of the large rivers Lielupe, Daugava and Gauja. Rising groundwater level could cause serious problems to people living in lowlands in the coastal zone where elevation above sea level is only 0,7 to 2.0 m."[24] These are only estimated numbers that resulted from two different scenarios, although these are only possible future projections they still need to be taken into account when making municipality planning documents.

[22]J. Harff, S. Bhorck, P. Hoth, *The BalticSea Basin*, Springer, 2011, pp. 338.
[23] The BAAC Author Team, *Assesment of Climate Change for the Baltic Sea Basin, Past and Current Climate Change*, Springer, 2008, pp. 108.
[24] Ibid, pp. 184.

Map on potential erosion risk areas in Latvian coast is presented below in picture no. 1.



Picture No. 1. **"Predicted coastal sediment changes foreseen in 50 years future."**[25]

[25]Jānis Lapinskis, *Jūra samazina Latviju*, Vides Vēstis mājas lapa, data retrieved from : http://www.videsvestis.lv/content.asp?ID=134&what=46

Based on the information presented in the picture, it must be acknowledged that there are many areas in Latvian coast that are subjected to the erosion risk. The information obtained in the picture is of high importance, because it will be used in analyzing the strategies of 17 coastal municipalities.

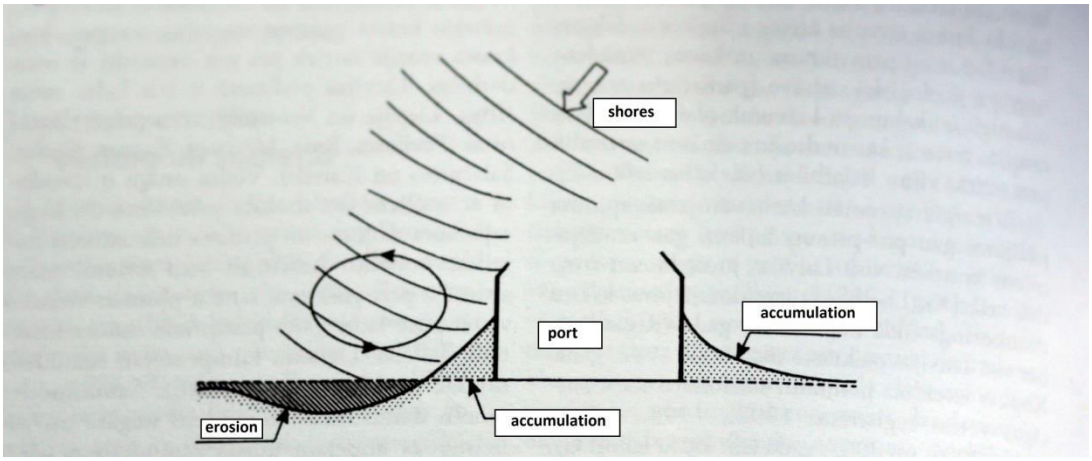
In context of climate change most important factors and processes that influence the Baltic Sea environment are : "1) water exchange with the North Sea, that influences water salinity, stratification and oxygen regimes in deeper water levels; 2) humidity, temperature and level of precipitation , that influence freshwater inflow into the sea and nonorganic nutrients run off and salinity of the sea; 3) water temperature that influences wildlife and living beings, through, for example growing speed and breeding cycle; 4) sea freezing over with ice, that is especially important in northern part of the Baltic sea in forming coastal biotopes and seal breeding; 5) storm frequency and strength, as well as water level fluctuations that influence coastal erosion."[26] The water exchange with the North Sea is an essential action that in last years has slowed down, so the water salinity, as well as oxygen regimes can be described as being lower than some years ago.

If we speak about coastal erosion risks "these processes are mainly influenced by storm strength and frequency, as well as wind direction, also ice regime (if the sea is covered in ice in winter time). Although not 100% correct, model calculation shows that in winter average wind speed above the sea can increase by 18%, proportionally increasing storm strength. So it is expected that water level changes that are influenced by storms will exceed global water level rising influence in the coast of Baltic Sea. Because of rising of storm frequency and strength, as well as lack of ice cover pronounced coastal erosion is expected."[27] Actions to prevent or at least to weaken the coastal erosion need to be taken. Coastal erosion is a real threat in Latvia, and it is necessary that not only national government takes actions in this question, but also local municipalities need to take part in strategic planning and decrease of actions that lead to coastal erosion need to take place.

Not only the sea is doing harm to the coast, local municipalities and inhabitants are equally responsible for erosion threat. "Conscious construction restrictions override is resulting in situation when we all are losers, including people that will live near coast in the future. Regarding

[26] A. Briede, M. Kļaviņš et. al. ,*Klimata mainība un globālā sasilšana*, Latvijas Universitāte, 2008, pp. – 66.
[27] Ibid, pp. 69.

last research prognoses, in next 15 year period Latvia will lose more than 310 ha coastal territory. Erosion will cover 258 km (51,1%) of the total length of the coastline. It is dependent of action or inaction how this prognosis will come true."[28] It is not only true regarding the house building in coastal areas, it is also important to understand how ports can affect the process of erosion. Evidence on important of the port on the process is presented in picture no. 2.



Picture No. 2. **"Impact of port external hydrotechnical structures on coastal processes."**[29]

It is vital to understand where spatial planning and port development can take place and where possible damage of the environment can be foreseen.

To sum this up – climate change is a difficult phenomenon that has brought attention of many specialists and researchers. In case of Latvia and sea coast, the climate change can be seen as a threat, because it changes not only the environment in the sea, it changes the coast. The biggest problem seen in Latvia, regarding the coast is erosion, which is not only sea- made, but also human made. People tend to put much pressure on nature and environment. If there is a need to live sustainably, the way of living needs to be changed or properly managed.

1.3. Tourism related pressures and possible solutions

There are many people that enjoy traveling and seeing new places. As it is acknowledged in the book by Pamela M. Barnes *Environmental Policy in the European Union*, "two of the most important problems facing the tourism industry are the destruction of the environment and

[28]Piekrastes apbūves vadlīnijas, latvijas lauku tūrisma asociācija "Lauku ceļotājs", 2010, pp. – 33.
[29] J. Lapinskis, G. Eberhards, *Jūras krasta erozija Latvijā : Problēmas un cēloņsakarības*, Piekrastes Ilgtspējīga Attīstība: Sadarbības Pārvaldība, Rīga, 2008, pp. 48.

pollution. There are two ways to tourism – 1) tourism activities can be damaging to the environment, 2) tourism industry is enhanced by clean environment."[30] Tourism nowadays is becoming more popular, in some cases nature preservation areas can be a major economic argument. It is certain that due to environmental impact of travel, as well as many individuals visiting sensitive nature areas, the development of sustainable tourism is an important jet difficult challenge. For tourism to operate properly, clean environment is needed, but with the tourism action - environment can be severely damaged. "Nowadays tourism far from being a force for enhancement and protection of the environment actually has considerable capacity to destroy the resources upon which it depends. There is a theory that mass tourist`s waves creates more serious range of impact than the small groups. But there is also a paradox – if the mass forms of tourism are well planned and also properly resourced, the environmental consequences may actually be less than those created by small numbers of people visiting locations that are quite unprepared for the tourist."[31]Many municipalities in the world, as well as coastal municipalities in Latvia are very interested in promoting tourism to their municipalities and coastal sights. In a long run this can not only bring bigger financial resources to the municipality, but also damage coasts and beaches.

If tourism flows will not be well planned and the anthropogenic load will be bigger than the environment can take, the biodiversity, coasts and the sea itself will be damaged. "Tourism will change the environment; it affects society, culture, also economy- it is essential to assure that environment will not be damaged by it. The environment in natural or man-made form is essential element of tourism product. Where it is feasible, the environment should be made more resilient to damage. The larger the scale of tourism, the more need there is to consider the planning of infrastructure and the management of process. If coastal resorts are developed, there is a need to ensure adequate sewage systems, so waste is no longer pumped into the sea. If there are particularly ecologically sensitive coastlines, it should not be overexploited."[32] So, if the municipality is planning to enlarge the number of tourists in the area, there should be action plans made for handling it. It can not be only stated, that the plan for municipality is to get more tourists, proper planning and management of the process needs to take place.

[30]P. M. Barnes, I. G. Barnes, *Environmental Policy in the European Union*,1999, Edward Elgar Publishing Limited, Cambridge, pp. 268.
[31]S. Wiliams, *Tourism Geography*, Routledge, 1998, pp-101.
[32]Ibid, pp. -269.

To decrease future problems, corresponding planning needs to take place, because "negative impacts from tourism occur when the level of visitor use is greater than the environment's ability to cope with this use within the acceptable limits of change. Uncontrolled conventional tourism poses potential threats to many natural areas around the world. It can put enormous pressure on an area and lead to impacts such as soil erosion, increased pollution, discharges into the sea, natural habitat loss, and increased pressure on endangered species."[33]So, before municipalities state their future goals regarding tourism industry, there is a need to make a research on the possible damage that tourism can bring to the environment that is in the territory of municipality. Right minded planning is in order to have a good management of the sea and the coast.

1.4. Pressures brough by human activity and possible solutions

Every human action creates a reaction (in this case environmental reaction). In book written by Marcus Reckermann et.al. *Climate Impact on the Baltic Sea : From Science to Policy* , some possible human impacts on ecosystem are mentioned. These are "shipping, coastal engineering and land reclamation, oil and gas exploration and production, recreation and tourism, fisheries, mariculture, human settlements and coastal industries, agriculture and forestry, mineral and aggregate extraction, dredging and dumping of waste and litter."[34] There are no easy solutions when it comes to maintaining the sea and human needs in coastal areas. It is understandable that people living in coastal municipalities need economic development, but on the other hand there is a need to sustain the resources. It is also understandable, that coastal municipalities, more than others, need a well working plan to live sustainably.

The human – induced pressures have contributed to "1) intensive and unsustainable exploitation of many fish stocks and other living resources; 2) pollution from harmful substances (e.g. heavy metals, persistent organic pollutants, radioactivity, oil spills etc.) including climate change caused by build – up of GHGs (Greenhouse gases) ; 3) excessive inputs of nutrients and organic material leading to eutrophication effects; 4) introduction of alien organisms including

[33]United Nations Environment Programme official homepage, *Tourism`s three main impact areas*, retrieved from : http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/TheTourismandEnvironmentProgramme/FactsandFiguresaboutTourism/ImpactsofTourism/EnvironmentalImpacts/TourismsThreeMainImpactAreas/tabid/78776/Default.aspx

[34] M. Reckermann, K. Brander et. all., *Climate Impacts on the Baltic Sea: from science to policy*, Springer – Verlag Berlin, 2012, pp. 25.

pathogens and diseases; 5) marked declines and local extinction of many vulnerable species; 6) degradation of the habitats that provide essential living areas (e.g. feeding, breeding, refuges) for species and communities; 7) distortion in the characteristic structure, function and integrity of ecosystems which have traditionally made them valuable. Thus, affecting their ability to provide important ecosystem *goods and services* for humans and so reducing human employment and the viability of coastal communities. "[35]Yet again it is proved that people tend to overuse natural resources, without thinking about the future perspectives.

If we speak about eutrophication problem, it could grow bigger if the predicted climate warming will take place. "If agricultural activities will increase (resulting from e.g. an extended growing season and greater demands for food and energy crops) and run-off are likely to lead to an increase in nutrient loading to the sea."[36] Baltic Sea region countries have already taken some action towards reducing these loading into the sea, but if agricultural activities will increase so could nutrient loadings and it can be foreseen that measures that are taken now, will not be enough.

Previous chapters focused on problems and causes for unhealthy Sea and beach conditions, some solutions that could be made, the next chapter will focus on two international documents - HELCOM and the Baltic Sea Action Plan. Main focus will be brought upon main subjects that have received political interest, as well as solutions intended for these problems.

[35]M. Reckermann, K. Brander et. all., *Climate Impacts on the Baltic Sea: from science to policy*, Springer – Verlag Berlin, 2012, pp. -24.
[36] Ibid, pp. 64.

2. International context on protection of the Baltic Sea

Living in a society requires that people behave according to some set of rules. The environment needs to be protected, and as Baltic Sea is seen as a common resource, there are some international laws, documents and strategies that require participation and in some cases - obedience. To maintain the sea in usable conditions, all countries around it need to work together. "Eutrophication, together with chemical pollution, over – fishing, alien species and global warming are the major environmental problems threatening the Baltic Sea and its fragile ecosystem."[37]In order to have a good and healthy Baltic Sea environment, many institutions and governing bodies (such as HELCOM and EU), have made action plans. Further in this chapter documents that are directly related to governing and planning of the Baltic Sea will be analyzed. Core findings from both international plans will be used in empirical analysis, as priorities that are set by them indicate main problems that need to be solved internationally.

2.1. Core priorities set by HELCOM – Baltic Sea Action Plan

The first document discussed in this chapter will be the Baltic Sea Action Plan written by Baltic Marine Environment Protection Commission – Helsinki Commission (HELCOM). It is vital because it shows what the political priorities are and what the real problems in the Baltic Sea are.„Institution was established about four decades ago to protect the marine environment of the Baltic Sea from all sources of pollution through intergovernmental cooperation."[38]It is very important that in the case of Baltic Sea,states around it cooperate in order to manage good changes. The vision of this governing body is to „have a healthy Baltic Sea environment with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable economic and social activities."[39] So this is not only a plan for the environment, it is also going to help such areas as social and economic activities. We surely have to protect the nature, but people and their activities also need to be taken into account. "The fact is that human beings have not been part of planet Earth for very long, but during this brief time they have had a catastrophic effect on the natural environment."[40] The biggest effect is seen in last 250 years, partly because of industrialization and urbanization took place.

---

[37]J. Harff, S. Bhorck, P. Hoth, *The Baltic Sea Basin*, Springer, 2011, pp. 366.
[38] About Us, Helcom homepage, retrieved from : http://helcom.fi/about-us
[39] Ibid.
[40] P. W. Sutton, *The Environment a sociological introduction*, 2007, Polity Press, Cambridge, pp. -58.

In the document that was written in 2007, and consist of 101 pages, some basic points and recommendations are mentioned. It is essential that municipalities that are around Baltic Sea (but also others) and have a border with it, take an action in right way. In preamble some really basic points are mentioned. Two most important are that „1) there is the need for integrated management of human activities and the need to take into account their impacts on the marine environment in all policies and programs implemented in the Baltic Sea region; 2) there is the need for integration of environmental objectives with economic and socio-economic goals in order to advance and strengthen the three interdependent pillars of sustainable development"[41] As Latvia was one of the countries that has adopted the strategy, it is essential to study these and further mentioned issues in the country (later in the research – coast municipalities).Usually local municipalities are primarily involved and responsible for such things as land-use and planning, waste management, public transport, pollution control and other.

It was agreed upon that there are four topics that are essential in order to achieve a Baltic Sea in good environmental status by 2021 – 1) eutrophication, 2) hazardous substances, 3) biodiversity and nature conservation, 4) maritime activities. All these topics will be further described in more detail.

2.1.1. Eutrophication

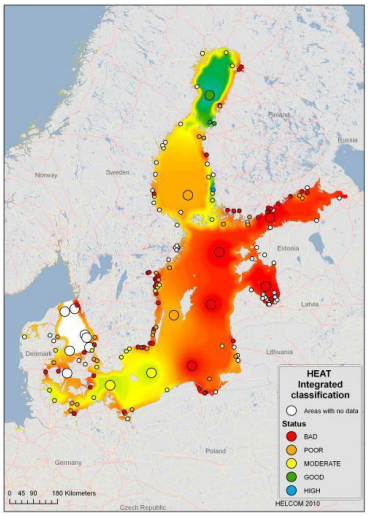
Eutrophication is a really big problem in some of the municipalities. It can be seen the best in summers, when some beaches are covered in algae and it is close to impossible to get into water because of it. „Since the 1900s, the Baltic Sea has changed from an oligotrophic clear-water sea into a eutrophic marine environment. Eutrophication is a condition in an aquatic ecosystem where high nutrient concentrations stimulate the growth of algae which leads to imbalanced functioning of the system, such as:1) intense algal growth: excess of filamentous algae and phytoplankton blooms; 2)production of excess organic matter; 3)increase in oxygen consumption; 4)oxygen depletion with recurrent internal loading of nutrients; and 5)death of benthic organisms, including fish."[42]Intense algae bloom can be a threat to biodiversity in the Baltic Sea, if it is not stopped, in a long run it will not only make the swimming in the sea unpleasant or even impossible, but it will disarrange the natural ecosystem. Previously mentioned 5 points are the reason why there is

[41]HELCOM, Baltic Sea Action Plan, Helcom Ministerial meeting document, Krakow, Poland, 2007., pp –3.
[42] Ibid, pp. - 7

a need in changing the situation in which we now can find ourselves. This is not only a theory that can be read about in books, but it can be seen in praxis in the Sea that we live near by.

There are some ecological objectives that describe the possible conditions that are foreseen in the future if the Baltic Sea would not be affected by eutrophication. The possible objectives are as follows :„ 1)concentrations of nutrients close to natural levels; 2)clear water; 3)natural level of algal blooms; 4) natural distribution and occurrence of plants and animals; 5) natural oxygen levels."[43] All these five objectives show that the problem is really topical. In order to have a better life quality (be it recreation, economic issue or social), clear water without an extra nutrients and natural levels of all sorts are needed. There will be no recreation possible, if the water in the Sea is dirty, it can cause many problems, diseases and in long term – people could choose either other residence or recreation place.

The reason why there is a need to speak about eutrophication, can be seen in the image below. HEAT (Helcom Eutrophication Assessment Tool) was used to determine the situation regarding eutrophication. The result shows that there are mostly the areas that are affected by eutrophication (marked as bad, poor or moderate) rather than areas that are not affected by it (marked as good or high). As it also can be seen, Latvian coast is marked either by red color (bad) or orange color (poor). This shows the necessity to change habits and the need to ensure strategies towards cleaner Baltic Sea.



Picture No. 3. Classification of eutrophication status in the Baltic Sea[44]

[43]HELCOM, Baltic Sea Action Plan, Helcom Ministerial meeting document, Krakow, Poland, 2007, pp. - 7
[44] HELCOM, BS Environment Proceedings No. 133, *Approaches and methods for eutrophication target setting in BS region*, 2013, pp. 9

If we speak about situation of eutrophication in Latvia, report on Implementation of HELCOM Baltic Sea Action Plan, has been written in year 2010. „To reach the objective of good environmental status, according to the preliminary burden- sharing arrangement between the countries, Latvia must reduce its nitrogen loadby 2560tones and its phosphorus load by 300 tones until 2021. The nitrogen load reduction concerns the Baltic Proper, whereas no additional reduction in nitrogen is required in the Gulf of Riga. The phosphorus load reduction concerns both the Baltic Proper and the Gulf of Riga."[45] It then means that there are some substances that are in normal level, but some of them are in such high level that there is a real need to reduce it. Of course there are some sub-causes for this (for example rivers that start in other countries), but in this report enough attention is brought for that. „Significant fraction of nutrients entering the Baltic Proper from Latvia originates outside its borders. Also there are a lot of uncertainties regarding natural background loads and natural retention of nutrients in the drainage basins of the Latvian rivers and lakes, making the current nutrient reduction commitments highly sensitive to coincidence of unmanageable natural circumstances. Transboundary pollution loads entering the Baltic Sea and the Gulf of Riga through Latvia and coming from Belarus, as well as from Lithuania, have not been taken into account in the calculations of the reduction targets."[46] Of course we have to take into account transboundary pollution and water pollution in other countries regarding our surroundings, but at this time we do not need point fingers at each other and say that this or that country did that. We have a sea border, and we are directly responsible for the Sea and its maintenance.

"It was found that in hydrologically active areas or upwelling areas, and in sites adjacent to municipal discharges and river estuaries, macrofaunal biomasses and abundances were constantly higher than in the adjacent sea despite similar bottom topography and sediment characteristics.Due to its shallowness and isolation, the Gulf of Riga is strongly influenced by riverine input. Increasing riverine input, intense agriculture, and the rapid development of industry and urbanization has resulted in high loads of nutrients in the Gulf of Riga since 1960s. In the 1970s and 1980s the nutrients in the Gulf of Riga increased significantly. In the 1990s, however, nutrient loadings decreased as a consequence of fresh water inflow, progress in sewage treatment and economic recession in the countries around the Gulf."[47] Although there is progress

[45]Implementation of HELCOM Baltic Sea Action Plan of Latvia, Ministry of the Environment, pp. – 5.
[46]Ibidem.
[47] U. Schiewer, *Ecology of Baltic Coastal waters*, Springer, 2008, Gulf of Riga and Parnu Bay,pp. 233 - 234.

in sewage treatment systems, also in Latvia and it`s coastal municipalities, it can be considered as not enough. More modifications and change is needed, because if previously economic recession was seen in the countries, sometimes resulting into closing up the enterprise (with all it`s utilities), now countries around Baltic Sea start to be economically active again, and industry is developing. This development can yet again threaten ecology of Baltic Sea by the nutrient, agriculture and industry waste loads into the sea.

In HELCOM recommendation 28/E 5, *Municipal wastewater treatment,* development of sewerage systems is discussed. There are five recommendations regarding this issue : "1) urban (municipal) wastewater deriving from households (domestic wastewater) or industrial enterprises should be collected and treated before being discharged into water bodies; by - passes may only be used in emergency cases; 2) the sewerage system must not be come deteriorated due to the content of substances in the effluent water from industries; 3) a separated sewerage system and/or a semi - separated sewerage system should be selected for new developments; 4) Sewers should be maintained and renewed in a way that infiltration and exfiltration are minimized; 5) the net infiltration in major catchment areas should not exceed 100% of the dry weather flow as a yearly average."[48]These are only recommendations and the countries around Baltic Sea can not be pushed to follow through the recommendation. Although all these five recommendations are logical and some of them are easily implemented, countries do not hurry to put them into practice.

To sum this up, the issue of eutrophication, the phenomena that is obtained by either excessive nutrient inputs (originating from such diffuse sources as agriculture and point sources – such as sewage treatment plants) is disrupting the natural balance of the Baltic Sea. It can be seen through marine dead zones on the seabed and algal bloom. More actions need to be taken in order to minimize algae bloom that is directly responsible for euthrophication of the Baltic Sea. Countries around Baltic Sea need to follow previously listed recommendations in order to have the possibility for recreational chance in the sea and it`s coast.

2.1.2. Hazardous substances

Hazardous substances are something that human beings should avoid in order to help the Baltic Sea to be healthy again. „Once released into the Baltic Sea, hazardous substances can

[48]Helcom reccommendation 28E/ 5, Municipal wastewater treatment, 2007, pp. 2.

remain in the marine environment for very long periods and can accumulate in the marine food web up to levels which are toxic to marine organisms. Levels of some hazardous substances in the Baltic Sea exceed concentrations in e.g. the North East Atlantic by more than 20 times. Hazardous substances cause adverse effects on the ecosystem, such as: 1)impaired general health status of animals;2) impaired reproduction of animals, especially top predators; 3) increased pollutant levels in fish for human food."[49]The presence of hazardous substances in the water, firstly, harms animals that live in the sea, but in the long run, it can also harm people, because the fish that is full of hazardous substances can not be eaten by people. So, by polluting the Baltic Sea, people hurt themselves. The goal, of course, is to make the Baltic Sea undisturbed by these hazardous substances. There are four ecological objectives that need to be achieved: „1) concentrations of hazardous substances close to natural levels, 2) all fish safe to eat; 3) healthy wildlife; 4) radioactivity at pre-Chernobyl level."[50] There are reasons to believe that in close future, if there will not be any changes, some or even many fish caught will not be safe to eat, thus this is a really topical issue. It is also logical that there are some hazardous substances in the water, but in order to reach the settled goal for Baltic Sea, this concentration should be maintained in natural level, only then the fish and other wildlife could be healthy.

If we speak about Latvia, „the calculations of the use and emissions of the substances prioritized in the BSAP (Baltic Sea Action Plan) are highly uncertain. The same applies to what is known about the possible effects of these substances on marine life. According to latest HELCOM assessments, majority of the substances prioritized in the BSAP are in low concentrations in the Latvian marine waters and biota or are not present at all. A substantial part of the national implementation programis therefore devoted to enhancing knowledge about the sources and distribution of hazardous substances in the Baltic sea and surface water bodies to identify sources and obtain missing data and information to analyze any adverse effects"[51] Yet again Latvia is a member in many initiatives and has ratified some conventions on pollutants and mitigation, but there is still a long way ahead to meeting these objectives.

To sum this up, despite all the good efforts that are made for pollution reduction, toxic substances (concentration of hazardous substances, that mainly come out from industrial

[49]Implementation of HELCOM Baltic Sea Action Plan of Latvia, Ministry of the Environment, pp. – 13.
[50] Ibid, pp. – 13.
[51] Ibid, pp. – 11.

activities), still remain high in the Baltic Sea. More actions need to be taken, if in the future people around Baltic Sea want to eat healthy fish that does not have high levels of dioxins.

2.1.3. Biodiversity and nature conservation

Biodiversity and nature conservation is considered to be very important in maintaining the good health of Baltic Sea. If we speak about ecological objectives, in HELCOM action plan there are three topics that refer to : "1) restoring and maintaining sea floor integrity at a level that safeguards the functions of the ecosystems; 1) that habitats, including associated species, show a distribution, abundance and quality in line with prevailing physiographic, geographic and climatic conditions; 3) a water quality that enables the integrity, structure and functioning of the ecosystem to be maintained or recovered."[52]Biodiversity can be described by three objectives set by HELCOM: "1) natural marine and coastal landscapes; 2) thriving and balanced communities of plants and animals; 3) viable population of species."[53] These objectives can be obtained through changes and adjustments in previously two mentioned spheres (euthropication and reduction of hazardous substances).

There is a concern regarding human activities (in the sea and on coasts) and their impact on environment. Recommendation 28E/9 determines four vitally important points regarding biodiversity : " 1) the Baltic Sea marine and coastal areas possess a unique biodiversity and resources, the use and protection of which requires special, sustainable and coordinated planning and new approaches to the management of human activities; 2) the Ecosystem Approach calls for cross- sectoral management of human activities; 3) the improper use of the marine and coastal areas may result in irreversible changes or long - lasting damage, and thus could affect the sustainable use of marine resources by future generations; 4) marine broad - scale spatial planning is an overarching spatial management method providing tools for comprehensive and integrated coastal and marine management" [54] These four objectives clearly show that improvement of the protection efficiency is needed.

To sum this up, the natural characteristics, seen in the Baltic Sea are limiting the biodiversity of thissystem; this makes the ecosystem extremely sensitive to pollution. Most

[52]HELCOM, Baltic Sea Action Plan, Helcom Ministerial meeting document, Krakow, 2007, retrieved from http://www.helcom.fi/Documents/Baltic%20sea%20action%20plan/BSAP_Final.pdf , pp. -17.
[53] Ibid, pp. 18.
[54] HELCOM reccommendation 28E/9, adopted 15 November 2007, pp.1.

important threats are made from commercial fisheries, also offshore activities, as well as invasive species.

2.1.4. Maritime activities

In case of maritime activities, there are many things that should be done differently. People are often not thinking years ahead, so the vulnerable Sea is the one that suffers the most. „The Baltic Sea is one of the most intensively trafficked areas in the world. Both the number and the size of the ships, especially oil tankers, have been growing during the last years, and this trend is expected to continue. "[55]The Baltic Sea is fragile Sea, as was mentioned before, and there are many objectives that have negative environmental impact on this fragile ecosystem, these are : „1)pollution to the air, 2)illegal and accidental discharge of oil, hazardous substances and other wastes, 3) introduction of alien organisms via ships' ballast water and hulls. "[56]With every human activity there are some possibilities that are possible for causing negative effect. There is need to reach the coal of cleaner Baltic Sea, eight management objectives that show the important areas are agreed upon : „1) enforcement of international regulations - No illegal discharges; 2) safe maritime traffic without accidental pollution ; 3) efficient emergency and response capability; 4) minimum sewage pollution from ships; 5) no introductions of alien species from ships; 6) minimum air pollution from ships; 7) zero discharges from offshore platforms ; 8) minimum threats from offshore installations"[57] If human beings fail to achieve these objectives, the detoriation of achievements in other previously mentioned fields .

To sum this up, traffic in the Baltic Sea has intensified, because of the growth in the economies of the countries around the Baltic Sea. Because of it, the pressure on the marine environment has risen; also there is a risk of a potentially disastrous oil spill. The risk of over – exploitation of marine resources is real, the biggest impact on the fish stocks in the sea are overfishing and degraded water quality. There is a need for more cooperative actions to help in recovery of depleted resources and damaged habitats.

[55]HELCOM, Baltic Sea Action Plan, Helcom Ministerial meeting, Krakow, 2007, retrieved from, http://www.helcom.fi/Documents/Baltic%20sea%20action%20plan/BSAP_Final.pdfpp. - 23
[56]Ibid, pp.- 23.
[57]Ibid, pp.- 23.

2.2. European Union Strategy for the Baltic Sea Region

European Union has made strategy with integrated framework that outlines the need and possibilities for achieving sustainable development in the region, taking into account possibilities for economic and social development. There are three main objectives – save the sea, connect the region and increase prosperity – with many sub-objectives, there are also 18 priority areas.In regard of this research, only part on Baltic Sea and priorities that can influence the sea and the coast will be discussed in the chapter.

In the strategy Sea has vital role, because without clean and safe sea the connection of the region and increase in prosperity will be close to impossible. First sub-objective, like it was in HELCOM issued document, is clear water in the sea shows that "The main areas for cooperation include cutting nutrient inputs from urban waste water treatment plants, rural settlements, shipping, and the application of sustainable agricultural practices in the whole catchment area, with particular focus on reduction of fertilizer inputs. Full implementation of all relevant EU legislation is needed, alongside cross- sectoral policy-oriented dialogue – for instance to promote the alignment of policies that have an impact on the Baltic Sea (including the Common Agricultural Policy). Moreover, technical solutions going beyond EU requirements are in place for enhanced phosphorous removal in the waste-water treatment process, in line with HELCOM Recommendations 28E/5 and 28E/6, and these should be promoted and applied. "[58] Previously mentioned HELCOM recommendations are of great importance in the document of European Union. This document also initiates the cutting of nutrient inputs from urban waste water treatment plants, rural settlements and others. It is also implying that it is not an objective that one country can achieve, but participation of all countries surrounding Baltic Sea is needed.

Next sub- objective is rich and healthy wildlife (proposed also by HELCOM), " as potentially damaging to Baltic Sea wildlife and biodiversity now or in the near future include increased infrastructure development (such as ports, pipelines, power cables etc.) and increased coastal zone activities (including cities, tourism facilities, coastal defense structures, energy supply systems, fish farms).Fisheries directly impact on stock status which in turn affects food web structures. The Baltic Sea has a low number of commercially exploited stocks

[58]European Union Strategy for the Baltic Sea Region, Action Plan, 2009, retrieved from http://www.mfa.gov.lv/images/2015_09_11_ACTION_PLAN_FINAL_2015.pdf pp 37.

and predominantly single species fisheries, 90% of these are within the Community (Baltic Sea Region) and have only one external partner. Given these characteristics, the Baltic could be a basin in which to strengthen the ecosystem based approach to fisheries, as well as other specific action such as increased selectivity in fishing gears to work towards elimination of discards. Regional cooperation across the Baltic Sea can help support this."[59] It is acknowledged by EU that people may overuse the environmental resources.

Third sub-objective regards safe and clean shipping. These aspects should be taken into consideration : "1) reducing the environmental impact of ship air emissions and thus maximizing opportunities for innovation in shipbuilding and marine equipment, illegal and accidental discharge of oil, discharge of untreated sewage, hazardous substances, introduction of alien organisms via ships' ballast and hull fouling, and making joint risk assessments; 2)reducing air pollutant emissions such as PM (particulate matter) and NO_2(nitrogen dioxide) in ports and port cities by improving infrastructure (e.g. cleaner Non Road Mobile Machinery such as cranes) and improving logistics with the hinterland; 3) strengthening and integrating maritime surveillance system, which is a strategic tool proposed in the context of the Integrated Maritime Policy thanks to the Common Information Sharing Environment (CISE) tool, to help prevent marine accidents; 4) strengthening human capital: ensuring proper training, setting common standards and enhancing maritime careers; 5) reinforcing preparedness and response capacity to major emergencies on sea and on land at macro- regional level: improving cooperation and coordination between various actors (maritime safety, security, surveillance and disaster response agencies). "[60]

Last objective regarding the Sea is better cooperation. "In order to have a fully functioning planning system at regional (Baltic Sea) level, it is important that all coastal states have national activities for planning in place, and will work together on key transnational topics. The HELCOM-VASAB Working Group Road Map will guide the work in order to achieve the Strategy objective to implement MSP in all coastal states by 2020. Otherwise, cross-border cooperation on transboundary issues will not be fully addressed." [61] All these previously mentioned objectives need to be met till 2021.

[59]European Union Strategy for the Baltic Sea Region, Action Plan, 2009, retrieved from http://www.mfa.gov.lv/images/2015_09_11_ACTION_PLAN_FINAL_2015.pdf pp. 38 - 39.
[60]Ibid, pp. 39.
[61]Ibid, pp. 40.

In theoretical part information on coastal and dune maintenance, human activities, tourism impact, climate change and erosion was obtained. International strategies provided by HELCOM and European Union were examined. Based on obtained information, further in this study, analysis of development strategies of coastal municipalities will be carried out.

3. Coastal municipalities' development strategies analysis

There is a dilemma that coastal municipalities are facing – how to safeguard the unique coastal environment and Baltic Sea, that both are sensitive to climate change, while promoting local population social and economic needs. To maintain the given resources wisely, sustainable planning is in order. "There are 13 municipalities and four big cities (including the capital of Latvia) situated at coastal region with population 929,000 people or 42 % of Latvia's total population. Traditional economical activities in coastal regions for centuries have been related to fishing, port activities, tourism and recreation. During the last decade there have been significant changes in fisheries and coastal regions face with many socio-economical problems such as unemployment, shrinking number of people, population ageing etc."[62] There are 17 coastal municipalities (four cities: Jūrmala, Liepāja, Rīga, Ventspils, and 13 areas: Carnikava, Dundaga, Engure, Grobiņa, Limbaži, Mērsrags, Nīca, Pāvilosta, Roja, Rucava, Salacgrīva, Saulkrasti, Ventspils), that vary in the size of the territory and population. To further analyze the strategies, it is essential to know resident population changes in the coastal municipalities, author of the study chose to examine data in 15 years perspective. Data was obtained from homepage of Latvian Central Statistical Bureau. Three tables on population change between years 2000 – 2015 are presented below. Author chose to divide information in three tables, because of uneven number of inhabitants in each municipality.

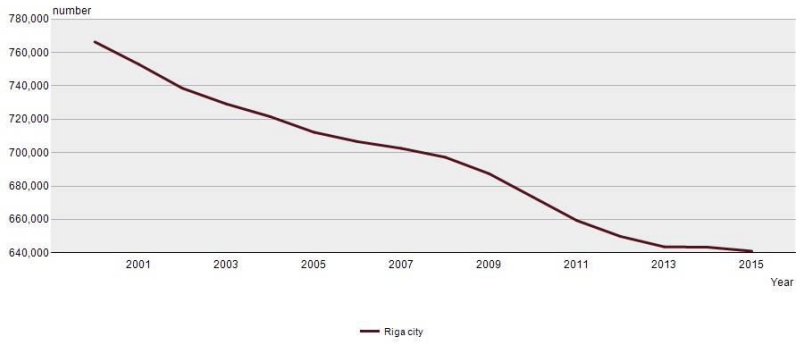


Table 1. Population change in capital city Riga between years 2000 and 2015[63]

[62]Latvian coastal municipalities discussing perspectives on innovative marine use, Sustainable uses of Baltic Marine Resources, data retrieved from : http://www.submariner-project.eu

[63] Central statistical bureau, population change, data retrieved from : http://data.csb.gov.lv/pxweb/lv/Sociala/Sociala__ikgad__iedz__iedzskaits/IS0120.px/?rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0

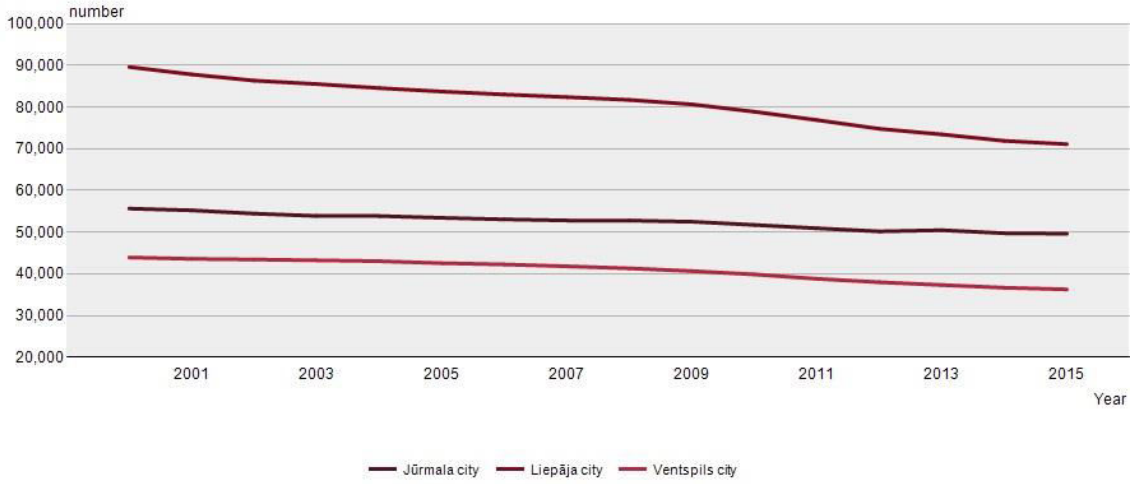


Table 2. Population change in Jūrmala, Liepāja and Ventspils between years 2000 and 2015[64]

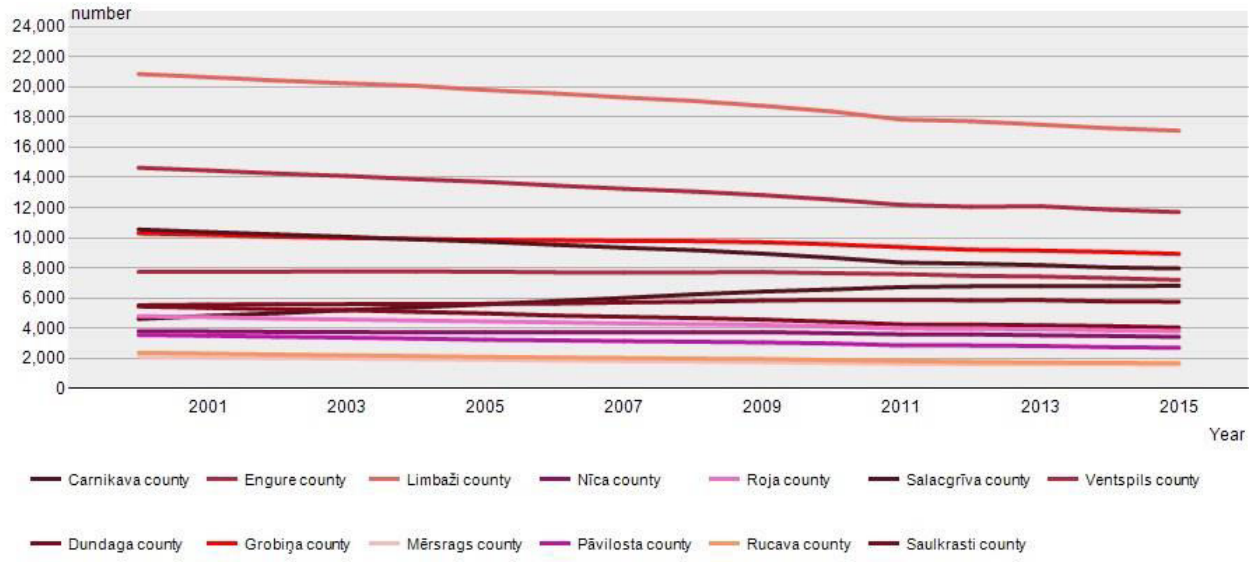


Table 3. "Population change in 13 county`s between years 2000 and 2015"[65]

It can be clearly seen, that in almost all coastal municipalities number of people living in them, is decreasing (except for Carnikava, where it has slightly increased). Usually municipality strategies should be tended towards increase in the number of inhabitants, mostly by ensuring the job possibilities and improving the living conditions. It was found in theory that coastal population growth increases demand for a continuing supply of clean water, waste disposal,

[64]Central statistical bureau, population change, data retrieved from : http://data.csb.gov.lv/pxweb/lv/Sociala/Sociala__ikgad__iedz__iedzskaits/IS0120.px/?rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0

[65] Ibid.

public health, food and protection from natural disasters. It was previously mentioned that economic activities most often seen in coastal municipalities are connected to fishing, port activities, tourism and recreation, these also are the activities that have a potential to harm either the coast, the sea or both. In situation where population decrease takes place, proper planning is first thing to be considered, because there are two ways how to deal with the issue. Firstly, policies towards population increase can take place, or, secondly, proper planning with existing resources could be another option. In regards to safeguarding the environment of the Baltic Sea, planning should be made with existing resources (human capital), nevertheless population increase can be considered as desired outcome for coastal municipalities and their development.

There is a need for every municipality to have either development strategy, development plan or a development program. In case of Latvian coastal municipalities every one of them has all three – firstly the strategy is made, and later on the plan or program is developed. A strategy is "a structured set of actions designed to achieve a particular goal. A strategy should provide a realistic guidance to the effective allocation of municipal resources – human, physical or financial. A strategy also can be considered as a blueprint, layout, design or idea used to accomplish a specific goal."[66] Strategy is not as concrete as plan, it is more flexible opposing to plan. Author of the study chose to examine development strategies because they are made for a long period of time, and based on priorities set in strategies, further planning is made. Future, of course, in most cases is unknown and for better adaptation for different scenarios, strategy is a better choice, because it can be easily modified regarding changing settings. Further in this chapter strategies of all 17 coastal municipalities will be analyzed through the prism of 6 priorities that are selected based on theory gathered in this study regarding environment of Baltic Sea.

Based on studied theory incorporated with knowledge obtained by reviewing international strategies, **6 priorities**that can have an impact on Baltic Sea protection were chosen – renovation or maintenance of sewerage system, education and information on environmental issues, planned ports and industry development, construction of new formations, erosion reduction activities and sustainable tourism with tourist flow planning. Three of them (sewage system renovation, education and information on environmental issues and erosion reduction activities) are directly

[66]F. Hauser, et. al., *Municipal Development Strategy process, A toolkit for practioners*, VNG International, The Netherlands, 2010, pp. 7-10. http://www.vng-international.nl/wp-content/uploads/2015/06/Toolkit_Municipal_Development_Strategy_Process_ENG.pdf

linked to the maintenance of the environment of the Baltic Sea. Two of priorities (planned ports and industry development, and construction of new formations) are directly linked to the possible economic benefits that, if not properly planned can lead to degradation of the environment. And one priority (sustainable tourism with tourist flow planning) can have both protective and degrading effect, because tourism and human impact as such can have a degrading influence, but if tourism flows are properly maintained, it can serve as environment protection. In this case priorities were chosen by the author of the study, based on studied theory and international strategies. All six priorities are discussed in more detail further in the study.

1) **Renovationor maintenance of sewerage system** is important because it could minimize the nutrient load that lead to eutrophication (this also accounts for agricultural waste from fertilizers and industrial wastes). There could be cases when sewerage system is in proper condition, because of this reason two options (renovation or maintenance) are allowed in this priority. The objective regarding eutrophication was mentioned in both international documents (HELCOM and Baltic Sea Action Plan made by EU),and was frequently mentioned in theory on climate change, so this makes the renovation and maintenance of sewerage system as an important priority that should be taken into account in strategies of Latvian coastal municipalities, especially in cases where constructions of new facilities and increase in population is being planned, because, at is was discussed in theory, dense population near the coast can damage fragile environment, found near and at the sea.

2) **Education and information on environmental issues** is an important priority if municipality wants to get better results in safeguarding the Baltic Sea. To promote environmentally friendly behavior, municipalities need to educate their citizens and by that increase awareness of their inhabitants on how their actions can affect the environment of the Baltic Sea. Human activities are responsible for pressures on coasts, beaches and sea itself, so education towards sustainability and proper use of resources is in order to preserve natural resources and help to accomplish priorities defined in international documents. Although this is a soft measure and people tend to ignore obtained knowledge on this issue, it is still a relevant priority and an act of good will towards sustaining of the environment and the Baltic Sea.

3) **Planned portsand industry development** may cause possible increase in maritime accident risks that could result in pollution risks, ship source pollution or wastewater discharge into the sea. Development of the port, as well as industry development may help to increase contribution

to local municipality and build its competitiveness, but it can be a threat to environment of the Baltic Sea. Under this priority falls also pier construction or reconstruction with intention of extension. It can contribute to coastal erosion (based on scheme provided in theory).

4) **Construction of new formations** (houses, parking lots etc.) near the sea - Building of new houses (be it tourist accommodation or residential houses) can contribute to higher nutrient input into the sea, especially in those cases when sewerage system is not reconstructed. Construction of new parking lots may contribute to anthropogenic load and trampling, as well as erosion risks.

5) **Adaptation to climate change - erosion** – as climate change is taking place, such natural risks as erosion are of high importance for coastal municipalities. In theory four types of anti - erosion solutions were mentioned. These are: non - intervention, green measures (vegetation planting, conservation of coastal zone or reduction of anthropogenic load from recreation), manipulation with sediment material or building of waterworks constructions. It is necessary to examine if coastal municipalities introduce erosion matters in their strategies, because, as it can be seen in erosion map, provided in theory, many municipalities are at erosion risk.

6) **Sustainable tourism with tourist flow planning** – as it was mentioned in theory, the Baltic Sea and it`s coast are one of major resources for coastal municipalities. Climate change can be responsible for prolonged tourism season in coastal municipalities; this can be considered as one of the many reasons why coastal municipalities need to plan tourism in sustainable way, because as it was mentioned in theory, the formation of dunes is also affected by climate change. Tourism can damage natural values by trampling on beaches and dunes, to preserve habitats, either zoning or construction of trails can take place.

All 17 development strategies of coastal municipalities will be reviewed using these six priorities, defined by study author. To test the hypothesis, emphasis is brought upon information from development strategies. In cases of insufficient information or for clarification purposes, data and information from development plans or programs may be used, but it is not foreseen for all cases and all municipalities, as this would be other volume study and would demand using of other methods.

Development strategies are of high importance for further planning and setting of priorities for longer period. Further focus is brought upon 17 coastal municipalities (four cities: Jūrmala, Liepāja, Rīga, Ventspils, and 13 areas: Carnikava, Dundaga, Engure, Grobiņa, Limbaži,

Mērsrags, Nīca, Pāvilosta, Roja, Rucava, Salacgrīva, Saulkrasti, Ventspils) and their development strategies.

3.1. Carnikava municipality

To understand the priorities of Carnikava municipality, sustainable development strategy for year 2014 – 2030 was analyzed. The strategy consists of 31 page and it defines future perspectives and spatial development strategy. Carnikava municipality "occupies 84 km^2 territory, total amount of inhabitants is 6788, with density of 84 people on 1km2. It incorporates 11 villages – Carnikava, Eimuri, Garciems, Garupe, Gauja, Kalngale, Laveri, Lilaste, Mežciems, Mežragciems, Siguļi. It has 19 km long border with Baltic Sea."[67] Giving the circumstances that municipality is only 25 km away from capital city Riga, many people tend to work not in Carnikava municipality, but rather use it as place of occupation. Judging by data in table on population change in 13 coastal municipalities, Carnikava municipality is the only one in which population is growing, not decreasing.

The strategy itself concentrates on information about municipality and people, how important it is to make their life`s better. There are also mentioned the future perspectives that could influence the Baltic Sea "1) the municipality will be well known fishery traditions and purchasing center; 2) municipality will be popular recreational and health tourism territory throughout the year, not only for local citizens but also for all inhabitants of Latvia and foreign countries; 3) municipality will offer high quality education in science field that is essential for business attraction, core priority is also to educate people in environmental questions with regard to importance of the environment and it`s conservation. It is considered as a duty of a municipality to educate children and teenagers in educational institutions on importance of Nature Park and environmental preservation. One other priority set in this document is cooperation with other Baltic Sea region countries for better possibility to safeguard Baltic Sea waters."[68] While total amount of future businesses and fisheries, as well as recreational centers, is not known, it is difficult to say how much influence will it have on the Baltic Sea, but it is for sure that the influence is possible. Education is mentioned not only in regard to business attraction, the set priority is also to educate inhabitants in all age groups about environmental

[67] E. Pudzis, Carnikavas municipality sustainable development strategy 2014 – 2030, volume II, strategic part,pp. 3. http://www.apkartraksts.lv/box/files/strategijastrategiska_dalav06.pdf
[68] Ibid, Pp. 16- 18.

issues. This can be regarded as good will of municipality and soft measure that could change the mindset of Carnikava municipality inhabitants for better environmental protection.

If we speak about fisheries "development of needed infrastructure is planned for: fish landings and processing industry; direct selling and short supply chain promotion."[69]Production strategy anticipates to "create at least one territory suitable for production (industrial area), that would be equipped with necessary communication system and road network. The other thing that should be done is building of at least one building that is suitable for small enterprise."[70]This falls under priority *ports and industry* development, although municipality does not have a port, it is still planning to develop industry, especially fisheries that are primarily connected with the Baltic Sea and could be as harmful as port building. Construction of new building suitable for small enterprise can not be considered as corresponding with selected priority – constructions of new formations near the sea – because strategy foresees the construction in city center, which is not allocated near the sea.

Comparing the possibilities in Carnikava with other municipalities, it is conditionally in better position to tourists from Riga, it has relatively wide sandy beach, and it also has coastal dune forest massive – "several km area that is between the beach and housing area, for example Nature Park "Piejūra.", there are not many foreign tourists in the area, most visible people activity is during summer period (tourists from Riga and people that have summer houses in the municipality."[71]In case of recreation and health tourism industry the strategy is to "develop infrastructure that would allow to: fully and sustainably use inherited natural and water resources; provide customer flow throughout year (using sport and cultural events). Core priority in this case is to make coastal zoning for reasons of concentrating visitor flow. The priority towards nature park "Piejūra" is to form infrastructure based on information and visitor flow, for better possibility to safeguard the environment in this area, all infrastructure developed in the nature park is solely allowed only for diminishing anthropogenic load."[72]This falls under *Sustainable tourism with tourist flow planning*. Although tourism development is one of the core priority for Carnikava municipality progress, there are priorities in the strategy that suggest that municipality tries to find a way to balance these two dependents.

[69]E. Pudzis, Carnikavas municipality sustainable development strategy 2014 – 2030, volume II, strategic part,pp. 3. http://www.apkartraksts.lv/box/files/strategijastrategiska_dalav06.pdf
[70]Ibi, pp. 19.
[71] Ibid, pp. 18
[72] Ibid, pp19.

Giving the circumstances that population growth is taking place, and there are plans to build new houses and develop tourism, renovation and maintenance of sewerage system is a priority that is incorporated into development strategy. "To secure Baltic Sea development of two new sewage system branches in two parishes – Garciems and Garupe are planned."[73] Now there is one general sewerage system that is considered to be outdated and in the future purification capacity needs to be increased.

One remaining priority set by author (erosion reduction activities) is not mentioned in the strategy. In case of erosion reduction activities, it is not understandable why this is not set as a priority. Based on erosion map, presented in theoretical part of the study, there are areas where the accumulation exceeds to 10 -11 m, and retreat of 21 – 25 meters can be seen in river Gauja basin area, smaller retreats are seen in other access points in Lilaste and others. Municipality should rethink incorporation of strategy towards erosion reduction activities.

It must be concluded that Carnikava municipality had incorporated many environmental issues and priorities into the strategy. Renovation of sewerage systems is planned, as well there are priorities set for decreasing of tourism impact on the environment, and also such soft measure as education of local inhabitants is taking place. The strategy can be characterized as rather friendly to the environment of the Baltic Sea and the coast.

3.2. Dundaga municipality

The priorities of Dundaga municipality are described in sustainable development strategy for year 2014 – 2030. The strategy consists of 44 pagesthat include historical perspective and contemporary tendencies, strategic part and spatial planning perspectives.

"Dundaga region area is 673,9 km2, it is populated by 4638 inhabitants, with average density of 6,9 person on 1 km^2 (including Dundaga parish with area 557,1 km2 populated with 1675 inhabitants, and Kolka parish with area 116,8 km2 and 814 inhabitants). Municipality has 36 km long border with the Baltic Sea.Approximately 28% of all available land in the

[73]E. Pudzis, Carnikavas municipality sustainable development strategy 2014 – 2030, volume II, strategic part,pp. 3. http://www.apkartraksts.lv/box/files/strategijastrategiska_dalav06.pdf, Pp. 17.

municipality, is special are of conservation. ”[74]Kolka parish is marked off specially, because it has direct border with the sea, other territory contributes to possible environmental pressures.Dundaga region, as well as other municipalities is facing population decrease.

“Tourism is one of the main sources of income for the municipality. In the future perspective development of nature and culture tourism is foreseen. Because of the area of special conservation (Slītere Nationa Park) other environmental resources, and closeness to the sea, such tourism development areas as bird watching, hunting, recreation are planned to evolve. Cultural tourism is also of high importance, because of the Liiv heritage. It is estimated that Cape Kolka is yearly visited by 50 000 people. ” [75] In municipality strategy priorities towards tourism development are set, but there is no strategy on how to manage tourism in sustainable way. Beach zonings and trail constructions are not a set priority.

In regard of erosion reduction activities, the strategy only acknowledges, that this problem exists. Taking into account that Cape Kolka is a sensitive biotope (based on information obtained from erosion map (picture No. 1), Cape Kolka retreat intensity could intensify reaching 81 - 100m) and the fact that cape is influenced by waves from both sides, strategic priority should be connected with risk management.

“Biggest problem for existing sewerage system in Kolka is its capability. Wastes that come from fish processing in case of intensive productionexceed urban wastewater quantity by 7 times.Priority is to provide centralized sewage system availability for 60 % of inhabitants living in Kolka parish. Reconstruction of sewerage system in Mazirbe and Dundaga is in order.”[76] The contemporary situation of sewerage system is identified and priority actions are set out in the strategy.

If we speak about education and information on environmental issues, one straight priority is set forward as “cooperation between municipality, inhabitants and entrepreneurs in solving environmental issues. In order to have secure and clean development environment and proper waste management, inhabitants of Dundaga municipality need to be informed and educated in environmental issues.”[77] This priority can be considered as an attempt to promote

[74]Dundagas novada ilgtspējīgas attīstības stratēģija 2014 – 2030 gadam, data retrieved from http://www.dundaga.lv/files/2014/3/1/Dundaga_ias_projekts.pdf pp. 3 -4
[75] Ibid, pp. 9, pp. 24.
[76] Ibid, pp. 13, Pp. 32.
[77] Ibid, pp. 19.

environmentally friendly behavior and awareness increase among citizens. Nevertheless it is a soft measure, it still can have an impact on well being of the Baltic Sea and the coast.

Construction of new formations, such as houses, parking lots and others, can be damaging for the environment of the Baltic Sea.In case of Dundaga municipality, "dense housing areas are planned within villages. Regarding coastal building areas specific conditions need to be taken into account. Expected climate changes are also taken into account – expanding of villages along the coast (especially in Kolka) should be limited."[78] Although formation of new housing areas is planned, they will not go out of village area, namely, will not be situated on or near dunes, as expanding along the coast is planned to be limited, and with regard to reconstruction of sewerage system, can not do visible harm to the environment of the Baltic Sea. Building of new parking lots is not a priority.

Last objective set out by study author was *ports and industry development*. While reviewing sustainable development strategy of Dundaga, there were no priorities found regarding development of ports or industry, that could be explained by territory specifics.

It must be concluded that although industry development, port construction and constructions of new formations are not foreseen, there are priorities that have a potential in damaging the Baltic Sea environment. Tourism development is foreseen without any sustainable planning, also erosion reduction activities are not of high importance (nevertheless there is a need for that). The results given by this strategy are inconclusive and can not state that environmental questions are not a priority.

3.3. Engure municipality

To understand the priorities of Engure municipality, sustainable development strategy for year 2013 – 2030 was analyzed using six priorities set in the beginning of the chapter. The strategy consists of 37 pages, and it includes information on development strategies and spatial planning.

"Engure municipality occupies 397, 5 km^2 territory, and incorporates three parishes – Smārde, Engure and Lapmežciems, it has 50 km long border with the Baltic Sea. Total

[78]Dundagas novada ilgtspējīgas attīstības stratēģija 2014 – 2030 gadam, data retrieved from http://www.dundaga.lv/files/2014/3/1/Dundaga_ias_projekts.pdf pp. 28.

population of municipality is 7855 with population density 20, 2 people on 1 km^2."[79]Engure municipality is facing population decrease, as it can be seen in the table on population change in 13 municipalities.

"Waste water treatment is used by ~ 20% of all inhabitants that live in the municipality."[80] This indicator is extremely low. Sewage system renovation is set as a priority "for the purpose of healthy living conditions and development of the industry."[81] There is an acute need for reformation of the way in how municipality is dealing with it`s waste waters. Regarding information that is provided in Engure municipality action plan section on planned investments, "reconstruction of sewerage system in Smārde will take place in year 2016 with duration of one year, in which total amount of 1, 1 million Euros will be invested. Further action foresees sewage pumping reconstruction that will enlarge percentage of inhabitants that will use wastewater treatment options."[82]Waste water treatment is of high importance, because it can influence eutrophication outcome.

Education and information on environmental issuesare not the priority that is mentioned in the strategy of the municipality. No further analysis on this topic can be made.

"In Engure municipality there is a small port with territory of 18,2 ha. Engure port and two yacht ports are of significance in development strategy. It is essential to promote fishing, fish processing and yacht port development in Abragciems and Ragaciems by integrating these ports in network between existing and planned yacht ports."[83]Development of small port is set as a development priority, which will help to develop industry as well.

In case of erosion reduction activities, only one objective is mentioned. "While developing coast as a place for tourism and recreation, there is a need to take into account possible erosion risk."[84] Although erosion is being mentioned in a strategy, it can not be considered as a priority that municipality is planning to take care of. Regarding erosion map (picture no. 1), Engure municipality in the future is facing both - accumulation and retreat in it`s

[79]Engures novada ilgtspējīgas attīstības stratēģija 2013 – 2030, data retrieved from http://www.enguresnovads.lv/uploads/filedir/Engures_novada_ilgtspejigas_attistibas_strategija_Projekts_1.pdf pp. 3 - 6.
[80] Ibid, pp. 7
[81] Ibid, pp. 25 - 27
[82]Ibid, pp.10.
[83]Ibid, pp..27.
[84] Ibid, pp.32.

territory. It is recommended to revisit the strategy and include erosion reduction activities in the strategy.

There are four objectives regarding tourism. "1) The use of the area shall be determined by specially protected nature territories and the individual protection and use regulation; 2) for the conservation of valuable territories specially developed management measures need to be taken into account; 3) when planning to tourism and leisure activities, creation of increased load on ecosystem should be avoided; 4) tourism development is dependent on coastal resources and cultural heritage, degradation of these resources is prohibited."[85]These objectives fall into priority of *sustainable tourism* with partial tourist flow planning.

Last priority discussed is construction of new formations. Strategy foresees that "new residential buildings should be made in existing villages to avoid distributed development. It is planned that new residential buildings will be built near coastal territories."[86] Building near coastal territory can have a great impact not only on coastal environment, but also on the sea itself.

It can be concluded that strategy is focusing on both environmental sparing and degrading priorities, with bigger interest in priorities focused on economic gains and possible threat to the environment.

3.4. Grobiņa

To understand priorities of Grobiņa municipality, sustainable development strategy 2014 – 2030 was analyzed. It consists of 25 pages, and includes development planning and spatial development possibilities and future objectives. "Municipality was formed in year 2009, it occupies the area of 490,2 km^2, with 10 220 inhabitants."[87]Analysis of this strategy was made difficult because there were no clear future priorities set (except for economic specialization), it was fuzzy and unstructured with many attempts to talk around without giving words a real

[85] Engures novada ilgtspējīgas attīstības stratēģija 2013 – 2030, data retrieved fromhttp://www.enguresnovads.lv/uploads/filedir/Engures_novada_ilgtspejigas_attistibas_strategija_Projekts_1.pdf pp. 31 – 32.
[86]Ibid, pp. 33.
[87] Grobiņas novada oficiālā mājas lapa, data retrieved from : http://www.grobina.lv/index.php?option=com_content&view=category&layout=blog&id=111&Itemid=121

purpose of strategic thinking. It could be explained by the fact that it is a first strategic document made by the municipality.

Economic specialization of 10 sectors is set as a priority "1) agriculture; 2) forestry and wood processing; 3) tourism; 4) extraction of mineral resources; 5) the production of renewable energy; 6) transport and logistics; 7) metalworking; 8) maintenance and repair of motor vehicles; 9) construction and road building ; 10) food production."[88] Many of set priorities refer to industrial development, municipality does not have a port, but is using opportunities brought by Liepāja city port.

"Aesthetic places that are near the rivers and the sea coast will be a place where construction of new formations will take place, especially these areas will be used for*second house*building. It is important to draw attention to the fragile environments while working on construction."[89] Nevertheless importance and acknowledgement of possible environmental damage is mentioned, plans for constructions of new formations, in this case, house building, is set as a possible future option. There is no information on sewerage system maintenance or development; this indicates that it is not seen as a priority regarding circumstances of new house buildings and development of the industry that is foreseen.

In regard to tourism development priorities are set that "people will have jobs connected to management of natural and cultural heritage. It will also foresee the development of walking trails, habitat and landscape maintenance."[90] Tourism development is seen as a priority for future development, Grobina municipality anticipates that in order to maintain the environment in good health, involvement of local inhabitants is needed. So by setting this priority, Grobiņa municipality is advocating two priorities set by author – sustainable tourism development and education and information on environmental issues.

The last priority previously chosen by the author – erosion reduction activities – is not mentioned in the strategy. Regarding information that was presented in the theory on territories that face erosion risks, it can be seen that near Šķēde parish (incorporated in the Grobina municipality) some risks or erosion (retreat of 31 – 50 m) is foreseen.

[88]Grobiņas novada ilgtspējīgas attīstības stratēģija 2014 – 2030, http://www.grobina.lv/index.php?option=com_content&view=category&layout=blog&id=237&Itemid=279 pp. 4.
[89]Ibid, pp. 14.
[90]Ibid, pp. 19.

In the strategy reference to European Union and other international documents, strategies etc. is made[91], but the exact documents are not mentioned. It must be concluded that the exact set of priorities is not mentioned in the strategy, but from information retrieved from the material, it can be said that future strategic actions are both harming and environment conserving.

3.5. Limbaži municipality

To understand priorities of Limbaži municipality, sustainable development strategy 2013 – 2030 was analyzed. It consists of 40 pages, and includes description of contemporary situation, strategic part and spatial development perspectives.

"Limbaži municipality occupies 1170, 28 km^2territory, and it consists of Limbaži city, Katvalu, Pāles, Skultes, Umurgas, Vidrižu, Viļķene parishes. Total population is 17 498 people, with total population density of 15 people on 1 km^2. Municipality has 5 km long border with Balic Sea in Skulte parish."[92]Population is also decreasing, as it can be seen in table 3.

"Contemporary situation is that ~ 70 % of all inhabitants have access to centralized sewage system, and there is a priority to connect more inhabitants to this centralized system."[93] Although situation is better than in most coastal municipalities, there is a priority to connect even more people to the sewerage system and it can be considered as a priority that can help to maintain the environment of the Baltic Sea.

There are three core priorities set in the strategy – "1) creative, innovative and healthy resident; 2) supportive and encouraging business environment; 3) sustainable development and good living environment."[94] All these priorities have objectives how to achieve it.

In case of creative, innovative and healthy resident "strategic objective is to support inhabitants by individual growth opportunities and raising of prosperity. Inhabitants are making their municipality a better place by participating in cultural and municipal activities. Healthy

[91]Grobiņas novada ilgtspējīgas attīstības stratēģija 2014 – 2030, http://www.grobina.lv/index.php?option=com_content&view=category&layout=blog&id=237&Itemid=, pp. 3.
[92]Limbažu novada ilgtspējīgas attīstības stratēģija 2013 – 2030, retrieved from : http://www.limbazi.lv/images/stories/dokumenti/planosanas_dolumenti/Ilgtspejigas_attistibas_strategija_.pdf pp. 6 - 10.
[93]Ibid, pp. 17.
[94] Ibid, pp. 14 – 15.

person is a precondition for qualitative social environment."[95]The priority of the municipality is it`s residents and his needs.

Supportive and encouraging business environment "foresees maximum use of accessible resources for competitiveness building and employment stimulation. Traditional economic spheres are – food production, agriculture, logging, extraction of mineral resources, transport industry and tourism. It is foreseen that more people will choose to work from home, so rather than moving to big cities, they will stay in the municipality. Development of the industry is planned in Limbaži city."[96]Although industry development is planned, it can not be considered as the Baltic Sea or coastal environment harming activity, because all industry development is planned to be situated in Limbaži city, that is more than 5 km away from the coast.

Limbaži municipality has only 5 km long border with the Baltic Sea. Regarding development of coastal area, 6 guidelines are of high importance: "1) economic activity that intends to do harm to the coastal environment is strictly forbidden; 2) contribution to the conservation of coastal forests; 3) contribution to the beach improvement regarding normative acts; 4) development of tourism and recreational objects in coastal territory is supported with appropriate infrastructure development; 5) development of transport infrastructure in coastal territories regarding normative acts; 6) development of local plans to provide public access to the beach."[97]The fact is, that municipality has only 5 km long border with the Baltic Sea. These 6 guidelines show that it is intended to use this resource to the fullest. Some of the priorities may contribute to the degradation of coastal environment.

Regarding the coast and the sea, main priority is to develop tourism infrastructure "by construction of new formations (hotels, campsites, parking lots), regarding environment conservation regulations. Development of new houses is also supported in accordance with protection zone law. "[98] This law foresees that "if the territorial local government spatial plan has been approved in cities, the coastal dune protection zone therein shall be not less than 150 meters, including as mandatory the specially protected biotopes therein."[99] The priority is set regarding national law, but the formation of new constructions can still have an impact on the dune

[95] Limbažu novada ilgtspējīgas attīstības stratēģija 2013 – 2030, retrieved from : http://www.limbazi.lv/images/stories/dokumenti/planosanas_dolumenti/Ilgtspejigas_attistibas_strategija_.pdf,pp. 14.
[96] Ibid, pp. 14 – 15.
[97]Ibid, pp. 31.
[98]Ibid, pp. 31.
[99] Aizsargjoslu likums, retrieved from : http://likumi.lv/doc.php?id=42348

sediment and the coast. “There is a priority that foresees building of walking tracks and other infrastructure for lessening the load on vulnerable environmental formations.”[100] Giving the circumstances that there is a special chapter devoted to environmental issues, it can be stated that environmental conservation is of high priority for this municipality.

In case of erosion reduction activities, it should be mentioned that in the strategy it is not set as a priority that could be explained by short border with the Baltic Sea. Regarding picture 1., presented in the theory, this 5 km border is facing a mild retreat from 11 – 30 m, that should be maintained properly. Plans regarding new construction formations near coastal zone could harm the environment and trigger the erosion possibility.

There is also only one sentence about residents and their knowledge on the environmental issues. Because of this, it can not be seen as a priority.

In conclusion it must be underlined that Limbaži municipality is seeing the environment protection and conservation as one of it`s priority. Nevertheless there is a chapter on environmental issues, other priorities, such as tourism development and new construction formation near the coastal zone can be seen as a threat to the environment of Baltic Sea and it`s coast and dune formation. Limbaži municipality should revisit it`s plans on construction of houses, hotel and parking lot near the coastal area.

3.6. Mērsrags municipality

In case of Mērsrags, spatial development strategy, developed in year 2011, was examined, as there is no sustainable development strategy document in this municipality.It consists of only 17 pages and incorporates information on future perspectives, strategic initiatives and spatial planning.

There are four main priorities : “1) port development that will help the municipality to become regions industrial centre; 2) tourism development balancing the environmental conservation and municipality interests; 3) improvement of resident life quality by renovating road system; 4) promotion of versatile personality formation with good quality education system

[100] Limbažu novada ilgtspējīgas attīstības stratēģija 2013 – 2030, retrieved from : http://www.limbazi.lv/images/stories/dokumenti/planosanas_dolumenti/Ilgtspejigas_attistibas_strategija_.pdf pp.34

and healthy lifestyle."[101] As it can be observed, core priorities are made regarding interests of local residents with little interest in the environmental issues.

Closeness to the sea is defined as a core development element. "Both municipality parishes are associated with the sea. Border with the sea defines the specific of residential occupation, development of small port and yacht/boat docks advancement. This closeness to the sea brings the possibility for municipality for summer house demand and tourism development."[102] It is clearly stated in the strategy, that Baltic Sea is a core element for development in many areas (especially port and tourism – both associated with possible threats to the environment of the sea and the coast).

Priorities for the use of the territory in the villages and outside it`s territory are as follows: "1) development of marine geology and training centre; 2) toilet facilities construction on the beach and in other public places in the village; 3) construction of parking lots near the sea; 4) provisions on area suitable for house building should be made; 5) place for wastewater treatment should be established; 5) place for fishing industry liquid waste treatment."[103] Development of marine geology and training centre can be regarded as soft measure – education on environmental issues. Construction of parking lots near the sea for better access can be regarded as threatening, because the construction itself can bring damage to the fragile ecosystem.

Regarding the environment itself, list of objectives is set: "1) development of consultative council regarding question of coastal construction monitoring; 2) complex of mechanisms regarding coastal erosion maintenance needs to be anticipated, based on knowledge from other countries; 3) required condition is to develop strategy how to incorporate all buildings near the waters (around 50m)into common waste water discharge system."[104] These priorities are set for nature conservation and for not overusing the coastal resources. Although Mērsrags municipality is only partially subjected to the future erosion perspectives (situation could change with development of the port), it is still considered in their development strategy.

---

[101]Mērsraga novada telpiskās attīstības stratēģija, 2011 retrieved from http://www.mersrags.lv/Dome/TeritorijasPlanojums/Terit_planojums_2011_L/Mersraga_TelpiskAS_teksts&shema.pdf, pp. 4.
[102]Mērsraga novada telpiskās attīstības stratēģija 2011, retrieved from http://www.mersrags.lv/Dome/TeritorijasPlanojums/Terit_planojums_2011_L/Mersraga_TelpiskAS_teksts&shema.pdf , pp. 13
[103]Ibid, pp. 15.
[104]Ibid, pp. 17.

In conclusion it must be pointed out that development strategy of Mērsrags municipality can be evaluated as quite environmentally friendly. Although core priorities are set in industry and construction development, questions regarding environment are also addressed. As the Baltic Sea is mentioned as a core development element, more attention should be put on safeguarding and not overusing of sea resources.

3.7. Nīca municipality

To understand the priorities of Nīca municipality, sustainable development strategy 2014 – 2030 was analyzed. It consists of 23 pages, and includes nowadays situation, future objectives and priorities, economic specialization and spatial development perspective. Nīca municipality lies on "35 079 ha territory (forests occupy 45 % and agriculture land 34 % of all territory) and 24 km of coastline along Baltic Sea, it has 3627 inhabitants with density of 10 people on 1 km^2."[105] In case of Nīca municipality, information on nowadays situation is given in the strategy. "Demographic situation in municipality is getting lower (-7% in comparison to previous year) – biggest future concern is aging population.

The basis for economic activities is such sectors as agriculture, tourism and manufacture (biggest future concern is ageing drainage system). There are three main exporting companies that engage in – elastic links production, fish canning and wood – processing."[106] As agriculture is giving ~ half of all income in the municipality, there is a need to restore melioration systems, because it is not only necessary for the agricultural use, but also for safeguarding the sea environment.

Tourism is accounted for ~ 1/5 of all income in municipality "as there is 24 km long coastline in municipality with sandy beach and dunes, it makes Nīca a summer destination. There are 22 tourism accommodations, of which 17 are located in 50 – 900 m radius from the sea."[107] Looking at this accommodation offer from environmental perspective, one must admit that it is not quite friendly to the dunes and is not quite corresponding to national legislation on protection zone law that foresees that "coastal dune protection shall not be less than 300 meters inland, if the territorial local government spatial plan has been approved in cities, the coastal dune protection

[105]Nīcas novada ilgtspējīgas attīstības stratēģija 2014 – 2030. Gadam, retrieved from http://www.nica.lv/wp-content/uploads/2013/09/N%C4%ABcas-novada-ilgtsp%C4%93j%C4%ABgas-att%C4%ABst%C4%ABbas-strat%C4%93%C4%A3ija-2014.-%E2%80%93-2030.-gadam.pdf pp. 3.
[106]Ibid, pp. 4- 5.
[107] Ibid, pp. 4-5.

zone therein shall be not less than 150 meters, including as mandatory the specially protected biotopes therein."[108]This can be considered as override of the law, it also can provoke instability in the dune ecosystem.

Previously in theory the fact of erosion was mentioned. Municipality itself acknowledges the fact that "along the coast there is strong possibility of wind erosion and in the future planning and carrying out economic activities should ensure the soil anti – erosion measures."[109] The problem is acknowledged, but there are still some measures that need to be taken care of.

In regard of future perspectives, economic activity is planned in such sectors as "tourism and recreation, agriculture, fisheries and industrial production." [110] Main sectors that will be developed are tourism and recreation sector. "It is mentioned that the fundamental resource to be used in tourism development, will be the Baltic Sea. The strategy is to make health resort in Bernāti parish as the main tourism attraction in municipality. New infrastructure needs to be built, few – storey's hotel and health complex needs to be constructed, trying to maximize the use of existing and non-used infrastructures. In all Nīca municipality coastal parishes tourists will have the possibility to rest in zoned beach and there will be possibility to use direct slopes down to the beach and built parking lots. The construction of walking paths along the coast and in the dune area is planned."[111] Bernāti parish is a place that is subjected to erosion. Building of direct slopes down to the beach or building of parking lots can be damaging to the environment and should be planned with regard to the environment. If a place is in real erosion risk, there should not be any solid building constructions planned near the sea.

Future perspectives are oriented also on fisheries and development of industry. "Fisheries will be oriented on sustainable use in the sea and fish processing. Municipality also plans to develop shellfish farming that could help with water pollution treatment. There are also plans for agar production industry development and factory creation for this purpose. Agar is a substitute for gelatin and is made out of algae."[112] The idea to develop shellfish farming is a good idea in regard to HELCOM action plan and a need to safeguards the environment of the Baltic Sea, by

[108] Aizsargjoslu likums, retrieved from http://likumi.lv/doc.php?id=42348
[109]Nīcas novada ilgtspējīgas attīstības stratēģija 2014 – 2030. Gadam, retrieved from http://www.nica.lv/wp-content/uploads/2013/09/N%C4%ABcas-novada-ilgtsp%C4%93j%C4%ABgas-att%C4%ABst%C4%ABbas-strat%C4%93%C4%A3ija-2014.-%E2%80%93-2030.-gadam.pdf ,pp. 6
[110] Ibid, pp. 12
[111] Ibid, pp. 12-13.
[112] Ibid, pp. 13.

purification. On the other hand, if this type of farming is intended to clean the Baltic Sea, there should be a reduction in algae, and it would make a plan of building factory for agar production ineffective.

There are four parishes (Jūrmalciems, Bernāti, Pērkone and Grīnvalti) that are the closest to the sea and actions planned in them could possibly affect the Baltic Sea and coast the most. Previously mentioned Bernāti parish is planned to become a centre for recreation and tourism. Challenges that need to be a priority are "1) partial central water supply development of the built – up areas; 2) provision of tourism and recreational areas in the construction of infrastructure in local spatial plan; 3) integration of Bernati natural park protection plan in the spatial plan of local government; 4) inclusion of potential climate change threats in local spatial planning documents and maximal reduction of environmental risks; 5) construction of parking lots in locations of tourists assembly."[113] In these mentioned challenges some disagreements can be seen. If they want to include potential climate change threats (this is erosion, sea level rise etc) in their planning, then there is a questionable 5th priority that foresees construction of parking lots in locations of tourism assembly. Group 93 has made assessment for Bernati, it is calculated that "anthropogenic load in summer varies from 100 – 300 people a day to 300 – 1000 people a day, making the beach from infrequently visited to averagely visited. Anthropogenic load is from moderate to strong in places that are easily reachable, to weak in sites that do not have easy access."[114] As there is strong presence of erosion risk, there is need to reevaluate the strategic plan in order to still have access to the sea and the beach in later years. As it was mentioned in theory – there are many ways to cope with erosion, but construction on eroded land is not one of them.

The next analyzed parish is Jūrmalciems located in Nīca municipality. "As heritage value can be seen in this parish, future developments and tourist attractions need to be built on the historical heritage. The challenges that could influence the Baltic Sea are :1) inclusion of climate change threats in local spatial planning documents; 2) partial central water supply development of the built – up areas; 3) construction of parking lot (near the sea); 4) the boat dock and pier

[113] Nīcas novada ilgtspejīgas attīstības stratēģija 2014 – 2030. Gadam, retrieved from : http://www.nica.lv/wp-content/uploads/2013/09/N%C4%ABcas-novada-ilgtsp%C4%93j%C4%ABgas-att%C4%ABst%C4%ABbas-strat%C4%93%C4%A3ija-2014.-%E2%80%93-2030.-gadam.pdfpp. 15-16

[114]Grupa 93, Nīcas novads, prioritāri attīstamās teritorijas, retrieved from : https://drive.google.com/file/d/0B--DpKULo7UzNFZEZUc1SkdNVXc/view pp. 1 - 2.

reconstruction."[115]Here again contradictions can be seen – there is a need to cope with climate change threats (erosion), but they want to build constructions near the sea making load on sediment bigger.

The next analyzed parish is Pērkone. "The parish historically has low density population (nowadays ~200 people). There is a need to build a thematic café. Two main priorities regarding the environment in the Baltic Sea are the priority is to include potential climate change threats in local spatial planning documents and partial central water supply development of the built – up areas."[116] It is not planned for the parish to become a tourism destination; it is rather seen as an object along the way. With building a thematic café serious threats are not foreseen.

The last analyzed parish regarding Nīca municipality, is Grīnvalti. "It is planned that demographic situation will improve. Three priorities that could influence the Baltic Sea are planned: "1) the development of residential building zone; 2) inclusion of potential climate change threats in local spatial planning documents; 3) centralized water and sewage system adjustments."[117] If the residential building zone development is planned, there is a great need to adjust sewage system that exists nowadays.

Throughout all the plans made for parishes that are in close location to the sea, inclusion of potential climate change threats in local spatial planning documents is planned. Nevertheless some other priorities go against the situation that could be foreseen in the future because of the climate change – tourism infrastructure building and development of residential building zones (in situation when decline in population is visible and forecasted for the future), can be considered as a threat to the environment. In a situation where there is a real erosion threat to the coast, plans regarding construction of parking lots, walking tracks for tourists and resort places for accommodation are made. So although throughout plan the need of climate adaptation is stressed, other plans and contemporary situation shows that it is not really a priority.

[115] Nīcas novada ilgtspejīgas attīstības stratēģija 2014 – 2030. Gadam, retrieved from : http://www.nica.lv/wp-content/uploads/2013/09/N%C4%ABcas-novada-ilgtsp%C4%93j%C4%ABgas-att%C4%ABst%C4%ABbas-strat%C4%93%C4%A3ija-2014.-%E2%80%93-2030.-gadam.pdfpp. 16.
[116]Nīcas novada ilgtspejīgas attīstības stratēģija 2014 – 2030. Gadam, retrieved from : http://www.nica.lv/wp-content/uploads/2013/09/N%C4%ABcas-novada-ilgtsp%C4%93j%C4%ABgas-att%C4%ABst%C4%ABbas-strat%C4%93%C4%A3ija-2014.-%E2%80%93-2030.-gadam.pdf pp16
[117] Ibid, pp. 16.

3.8. Pāvilosta municipality

To examine the priorities of Pāvilosta municipality, sustainable development strategy for year 2015 – 2030 was analyzed. The strategy consists of 36 pages, it defines future priorities and describes current situation. "Total area of Pāvilosta municipality is 515 km2, in year 2015 there lived 2970 inhabitants with average density of 5, 77 persons on 1km2."[118] It is a relatively small municipality that has border with the Baltic Sea. As well as other municipalities, it is facing population decrease (as it can be seen in table 3). Pāvilosta region economic specialization is: harbor services, agriculture, food production, forestry, fishery and rural tourism."[119] Harbor services and tourism development are topics discussed later in the chapter.

"Sewerage system exists and is available for 5 villages and Pāvilosta city, other 6 villages do not have access to the system. Domestic waste water is mainly is collected into sewerage system, purified and then channeled to water course. On of the core priorities is to connect all villages into one system, so reconstruction of sewerage system is in order."[120] Maintenance of sewerage water is directly responsible for decrease of eutrophication problem. As it was mentioned in theory and international document analysis, it is one of top priorities.

"Pavilosta has one small harbor with total territory 17,1 ha. It is used for small fishing vessels maintenance and parking, 11, 8 ha are located inland. The priority is to develop the port and territory near it to help other industries. It is a small but ice – free port that has a potential to become relevant in the Baltic Sea region."[121]In theory port development can be accountable for environmental changes, especially accumulation or erosion in nearby sediments. Erosion threat and it`s reduction activities are not mentioned. Judging by theoretical information showed in picture 1. Pāvilosta municipality is subjected to accumulation from the left side of the small harbor, and to erosion risks (from 11 – 30 meters). It can be advised for the municipality to revisit the strategy and to incorporate measures for reduction of possible erosion.

Regarding tourism, priority is to "make Pāvilosta a well known tourism destination with good infrastructure and many different offers of services (sport, culture etc.). It is essential to

[118]Pāvilostas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.pavilosta.lv/upload/Pavilostas%20novada%20strategija%202030_27_04%282%29.pdf pp. 4.
[119]Ibid, pp.14.
[120] Ibid, pp. 8., pp. 27.
[121] Ibid, pp. 7 – 8.

implement eco – tourism (berry picking, bird watching etc.) as main course of action. "[122]Eco – tourism can be regarded as a part of sustainable tourism development; it also usually incorporates education and information on environmental issues. Although topic of education and information on environmental issues is not mentioned separately, priority on development of eco – tourism helps to assume that education on the issue is associated with municipality`s priorities.

In the strategy of Pāvilosta municipality some priorities regarding good environmental health are stated, but there are also many priorities that, if not properly managed, could cause environmental losses.

3.9. Roja municipality

To understand the priorities of Roja municipality, sustainable development strategy 2015 – 2030 was analyzed. The strategy consists of 47 pages and includes nowadays situation and tendencies, strategic part that includes future goals and spatial planning. "Roja municipality has ~ 42 km border with the Baltic Sea. Municipality occupies 200,5 km^2 territory, there were 4186 inhabitants (density of 21 person per 1 km^2) as estimated in January 2015, with downward trend. Vital for development of municipality is the harbor. Biggest resource is the forest that occupies 76,4 % of all municipality land, only 13,2 % are occupied by agricultural land." [123] Roja municipality is also facing population decrease, regardless all the summerhouse`s inhabitants coming to Roja in summer, proper planning should take place.

"The harbor is the main development source for Roja municipality. Infrastructure is suitable for shipping service, fishing and fish processing."[124] Although the harbor is considered as small, it still gives the municipality the possibility to develop it`s infrastructure and capacity.

"Three main imperfections named by municipality are: 1) surface water drainage is in unsatisfactory condition; 2) undeveloped fish waste management; 3) four potentially dangerous pollution areas – 1 previously used landfill and 3 former pesticide and fertilizer warehouses."[125] In this case not only sewerage system needs to be renovated, but also four other areas of possible pollution should be taken care of.

[122]Pāvilostas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.pavilosta.lv/upload/Pavilostas%20novada%20strategija%202030_27_04%282%29.pdf, pp. 24.
[123]Rojas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.roja.lv/upload/docs/AttNod/2015/Rojas%20novada%20IAS-projekts.pdf pp.4.
[124] Ibid, pp. 7.
[125] Ibid, pp. 12.

"The Baltic Sea is another vital element for development in the municipality. 8 out of 9 parishes are considered as seaside villages. Closeness of the sea creates demand for seasonal type of accommodation, construction is planned on the way of inland, although construction in coastal area is also permitted, but only after re-examining the brochure made by *Lauku ceļotājs on guidelines for coastal construction.* The sea is basis for all development – harbor, tourism, basic occupation – fishing etc."[126]Regarding closeness to the sea, strategic objectives are as follows: "1) harbor development in Roja; 2) to gain equilibrium between development and sustainable availability of nature and its resources; 3) role of society in improving the quality of environment; 4) tourism development."[127]Although role of society in improving the quality of environment is mentioned, it is not sufficient to conclude that it corresponds to the authors set priority on education and information on environmental issues.

Tourism infrastructure can be developed because of "long border with the Baltic sea, closeness to Cape Kolka. Tourism industry experiences seasonality, but because of sea traffic to Estonian islands, tourism flow is rather stable. In tourism such areas as sports tourism, recreational tourism, bird watching should be promotedPerspective action is construction of sightseeing tower in Roja by first aid post and elsewhere in municipality."[128] Although such tourism branch as bird watching can not do real harm to the coastal environment, maintenance of tourism flow is in order, especially because of the fact that tourism itself is mentioned as one of main priorities in the strategy. Because of potential tourism industry increase "new parking lots should be constructed near the sea and social event places."[129] Construction of parking lots near the sea area should be properly maintained, if there is a fragile sediment or erosion risk, this priority should be changed.

Guidelines for developing and planning of the territory are as follows: "1) to save and protect special areas of conservation maintaining biodiversity; 2) the development of geological and geomorphologic nature monument "Kaltenes kalvas" individual protection and terms of use ; 3) reaching of natural areas (different kinds of beaches, natural monuments and cultural monuments) is going to be organized by special routes; 4) natural areas are important resources for rehabilitation and health; 5) sustainable use of natural resources is promotable balance

[126]Rojas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.roja.lv/upload/docs/AttNod/2015/Rojas%20novada%20IAS-projekts.pdf, pp. 23.
[127]Ibid, pp24.
[128] Ibid, pp. 14, pp. 23
[129]Ibid, pp. 15.

between development activities and restrictions on economic activities in natural area territories; 6) development of tourism and recreational proposals should be made only after obtaining an appropriate infrastructure; 7) cultural heritage needs to be maintained in traditional way – scale, plan and system of building construction. "[130] The guidelines that are set for territory planning are coherent with theory on safeguarding the environment. Special routes for reduction on anthropogenic load will be constructed, that means that sustainable tourism is used and made as a priority.

Perspective changes in spatial development are : 1) in all municipality, whereas it is possible traditional and valuable coastal landscapes, maintaining it`s aesthetic, recreational, ecological and social value; 2) maintaining of forest landscapes with forest management subjected to environmental protection; 3) in territory near Rude parish maintaining the management of rural (agricultural) areasis needed; 4) territories near natural monument "Kaltenes krasta veidojumi" and "Kaltenes kalvas", as well as near cultural monuments in Kaltene, Pūrciems, Melnsils, Roja and Ģipka need to be developed regarding environment and cultural value."[131] It is also important to mention that municipality acknowledges the erosion risk "high erosion risk is foreseen in Pūrciems, Roja, Kaltene, Valgalciems, and on the South of Roja port. In developing new infrastructure, erosion risk factors need to be taken into account."[132]

Judging by information obtained from development strategy, "sewerage system is used by 93% of total Roja municipality population."[133] Maintenance of existing system is foreseen.

Although there are priorities that are coherent with preservation of the environment, there are also priorities set that could potentially damage the environment.

3.10. Rucava municipality

To understand the priorities of Rucava municipality, sustainable development strategy 2013 – 2038 was analyzed. It consists of 46 pages, and includes prerequisites for development, strategic part, spatial planning perspective and territories of common interests. "Municipality occupies territory of 449 km^2, number of residents 1911 with distribution of 4,4 inhabitants on 1 km^2.

[130]Rojas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.roja.lv/upload/docs/AttNod/2015/Rojas%20novada%20IAS-projekts.pdf , pp. 17.
[131]Ibid, pp. 23.
[132] Ibid, pp. 5, pp. 34.
[133] Ibid, pp. 11.

Municipality has a 21 km long border with the Baltic Sea"[134] Rucava municipality (judging by table no. 3.) is also facing population decrease, and it is also not densely populated.

There are three objectives set in the strategy: "1) environment that supports economic activity and helps to generate revenues; 2) sustainable and harmonious development of the Baltic Sea coast; 3) balanced and attractive quality of life."[135] For achievement of these objectives, three main priorities are set "1) capitalization of natural resources (creating the highest value possible from the use of resource); 2) the use of coastal economic potential; 3) creative solutions in offering the services."[136] Set of objectives indicates that core priority of the municipality is economic development, the priorities set are coherent with economic development and have potential of harming the environment of the Baltic Sea by possible overuse of the resources.

Economic profile consists of "agriculture and forestry.The extraction of mineral resources, such as peat, sand and gravel takes place. Tourism is seen as potential of economic growth. Municipality will focus on actions that will promote increase in number of permanent residents and activities that will promote tourism (increase in number of visitors)."[137]It is outlined in the strategy that actions towards increase of inhabitants and visitors will take place.

Contemporary situation shows that "it is a place with high anthropogenic load during summers and low anthropogenic load during other seasons. Tourism attractions are connected to eco – tourism, nature, health and cultural tourism. Complementary action is building of health resort facilities. It is foreseen that instead of 5 existing tourist accommodations, there will be 20 in year 2018, and 40 in year 2038."[138]Accessible Baltic Sea coast of 21 km is of high importance in development of the tourism infrastructure. "To capitalize available resources, improvement of publicly available space needs to take place (construction of parking lots, development of public access points to the sea, use of different financial instruments for future development of the coast (real estate tax policy, requirement specific entry zone establishment etc.).For revitalization of the Pape village, such actions as development of health facilities, reconstruction of Pape port and others are foreseen."[139] Development of access points, such as parking lots, can be responsible for

[134] Rucavas novada ilgtspējīgas attīstības stratēģija 2013 0 2038. Gadam, retrieved from http://www.kurzemesregions.lv/userfiles/files/Rucava_IAS_1redakcija_apspriesanai.pdf pp. 5.
[135]Ibid, pp. 13.
[136] Ibid, pp.13.
[137] Ibid, pp. 6., pp. 20.
[138] Ibid, pp. 11., pp. 14.
[139] Ibid, pp. 15.

future sediment changes, based on the theory, building of parking lots may cause sediment reduction due to load increase.

Future perspectives show that "it is essential to develop schools, enrich the cultural life, health care and renovate the sewerage system in order to have inhabitants that are satisfied with life quality in the municipality."[140] In order to examine potential threats, coastal villages and foreseen actions need to be analyzed. There are four coastal villages in Rucava municipality "Pape, Papes Priediengals, Papes Ķoņu ciems and Nida. All three villages are situates in area of Natural Park "Pape" .It is envisaged that new building will be constructed in the villages near the coastal area. These villages will be the most used areas in the municipality, because of potential closeness of resources (sea, coast, port). It is anticipated that building of summer houses, at least 70 new constructions, will take place in Nida village and health resort facilities will be constructed in Pape village. Renovation of sewerage system is required for better living conditions."[141] If definitely necessary, constructions need to be formed inland, not near the coast. Referring to erosion map (picture 1.) presented in theory, it can be seen that Rucava municipality in the future could face retreat of 11 – 50 meters. With this forecast taking place, construction near the coast should be limited, renovation of port can take place only after analysis on potential pressure on environment. Erosion reduction activities are not a priority set in the development strategy.

Objectives and priorities set in the development strategy of Rucava municipality, are concentrating on economic and social capital development. Education about environmental issues is not a priority, although it is a soft measure, with closeness to the sea and "Pape" Natural Park it can be suggested as a priority for sustainable future development possibilities. It must be concluded that priorities set by Rucava municipality can have a potential of harming the environment of the Baltic Sea and the coastal formations.

3.11. Salacgrīva municipality

Priorities selected by Salacgrīva municipality were obtained through analysis of sustainable development strategy 2015 – 2038. The document consists of 29 pages and incorporates

[140]Rucavas novada ilgtspējīgas attīstības stratēģija 2013 0 2038. Gadam, retrieved from http://www.kurzemesregions.lv/userfiles/files/Rucava_IAS_1redakcija_apspriesanai.pdf pp. 16.
[141]Ibid, pp. 23.

information on long – term developments, objectives and methods, municipality specialization and spatial planning perspectives.

"Municipality occupies the area of 637, 6 $km^{2,}$ the total population is 8 658 inhabitants with density of 12, 58 persons on 1 km^2.Border with coast is 55 km long. Core sectors of economic development are forestry, wood processing, agriculture, industry, fish processing, tourism and other. Salacgrīva municipality has confirmed the "Green Declaration" that has an objective to promote sustainable lifestyle through sustainable environmental use and healthy economy."[142] As well as other coastal municipalities, Salacgrīva is facing population decrease.

Port is one of the main possibilities for development. "Ports that is allocated in Salacgrīva has 6 piers with 28,6 ha water territory, 14,4 ha of inland (14 ha are used for handling purposes). It is an essential transit point for such good as peat, wood, construction supplies and others."[143]

There are five priorities set in the strategy: "1) prosperity of the society; 2) entrepreneurship; 3) mobility and service availability; 4) sustainable use of the environment; 5) effective management."[144] The first priority focuses on the needs of society. It foresees that "it is essential to build safe economic environment and promote education and healthy lifestyle. People will benefit from enterprises constructed in Salacgrīva." [145] Core priority in development of entrepreneurship is closeness of the sea and the port. "Further development of port and yacht harbors is foreseen to raise the competitiveness. For further development clever use of human and natural resources, as well as infrastructure maintenance is needed."[146] In case of mobility and infrastructure availability "tasks are to renovate and construct roads and bicycle paths. For better tourism infrastructure to the sea construction of new parking lots, building of new accommodation facilities and catering industry development is foreseen, cooperation with summer festival "Positivus" will still take place, as well as other cultural activities. It is essential to renovate and maintain the sewerage system, in order to have healthy and environmentally friendly waste water treatment. "[147]Development of tourism infrastructure (parking lots and accommodations), can be damaging for the environment, especially if the construction is planned

[142]Salacrīvas novada ilgtspējīgas atīstības stratēģija 2015. – 2038. Gadam, retrieved from : http://www.salacgriva.lv/files/news/31883/salacgriva_ias_gala_apst.pdf, pp. 9 – 10., pp. 16.
[143]Ibid, pp. 12.
[144]Ibid. pp. 16 – 17.
[145]Ibid, pp. 16.
[146]Ibid, pp. 17.
[147]Ibid, pp. 17.

near the coastal environment. By sustainable use of natural resources "there is a possibility for improvement of resident`s health conditions, organized pedestrian and transport movement and development of the industry."[148] It seems from the strategy perspective, that environmental sustainability is seen not as a core priority itself, but as a possibility for future economic development and well being of the society.

There is no information in the strategy that would mention education and information on environmental issues as an objective or a priority.

Erosion risk and reduction activities are not mentioned in the Salacgrīva municipality strategy. Based on information, obtained from picture no 1., there are no substantial erosion threat (except for some areas where retreat is foreseen till 40 m). Nevertheless a substantial erosion threat is not foreseen, there is still a need to develop possible erosion maintenance measures, and especially no buildings or parking lots should be built near coastal area.

Salacgrīva is positioning itself as environmentally friendly municipality, although there are some actions that may lead to conclusion that environmental protection is only a sub- priority for economic development and resource availability for industry and tourism.

3.12. Saulkrasti

To understand the priorities of Saulkrasti municipality, sustainable development strategy for 25 year period (2013 – 2038) was analyzed.There is no information in the strategy onresident population in Saulkrasti municipality. Information from Central Statistical Bureau of Latvia shows that in year 2015, number of residents was 5750[149]. "Municipality occupies 46, 8 km^2 territory and shares 17 km long border with the Baltic Sea."[150] In this municipality also tendency of population decrease is seen. Future vision is that "Saulkrasti will be very well known tourism destination in Baltic Sea region with environmentally friendly infrastructure. It could be the destination throughout year for acoustic concerts and other cultural activities. Harbor that is located in Skulte will evolve. through cargo port development and it`s availability throughout

[148]Salacrīvas novada ilgtspējīgas atīstības stratēģija 2015. – 2038. Gadam, retrieved from : http://www.salacgriva.lv/files/news/31883/salacgriva_ias_gala_apst.pdf,, pp. 17.
[149] Central Statistical Bureau homepage, resident population statistical data, accesed in http://data.csb.gov.lv/pxweb/lv/Sociala/Sociala__ikgad__iedz__iedzskaits/IS0120.px/table/tableViewLayout1/?rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0
[150] Saulkrasti municipality homepage, data retrieved from : http://www.saulkrasti.lv/index.php/lv/novads

year. "[151] There is no information on what is the situation of people density on the beach; mainly information is available for centre of Saulkrasti. The research on anthropogenic load, made by Group 93 in *Long – term thematic plan for Baltic Sea coast* was carried out last year (2015), in summer time. It was estimated that "anthropogenic load of people in this part of the beach is on average between 1000 – 5000 people a day throughout summer. Strong influence on coastal vegetation is recognizable." [152]Nevertheless the walking trails from wood are made in this part of the coast, it is not enough to safeguard the dune environment, because people are walking not only on the trail that was made especially for this purpose, but also on dune vegetation and other sensitive formations. Although it is mentioned in strategy that environmentally friendly infrastructure will be made for safeguarding the sensitive formations, contemporary situation seen in the Saulkrasti municipality shows that it can not manage nowadays anthropogenic load and thus with tourism development priority can harm the coastal environment.

There are set some priorities regarding entrepreneurship – primarily there are two types that are supported – hospitality and harbor related. It is written in the strategy, that other kinds of entrepreneurship are also supported if" 1) it is helping to develop new work places and helps to minimize influence of seasonality; 2) it is not going against cultural and environmental values ; 3) if it is ethically acceptable in the municipality and encourages people to move to Saulkrasti for a job. Municipality does not support economic activity that needs class A pollution permit. It also does not support growing of genetically modified crops."[153] The fact that there are not genetically modified crops growing allowed in the municipality means that in case of agriculture they are at least trying to suppress newest trends. On the other hand, promoting all sorts of entrepreneurship activities, especially those connected to hospitality and harbors can be considered as potentially damaging for the environment of the Baltic Sea. Harbor development is one of the core elements for other sectors. "It is a priority to develop the port, it will be done by small vessel attendance, development of territory near the port and by securing that sailing is available throughout the year."[154] As it was mentioned in selecting priorities, they may cause possible increase in maritime accident risks that could result in pollution risks, ship source pollution or wastewater discharge

[151] Saulkrastu novada ilgtspējīgas attīstības stratēģija 25 gadu perspektīvā, retrieved from http://www.saulkrasti.lv/images/stories/Attistibas_dokumenti/Saulkrasti-Stratija_Final_30-04-13.pdf, pp. 5- 7.
[152]Grupa 93, Saulkrastu novads, prioritāri attīstāmās vietas, data retrieved from https://drive.google.com/file/d/0B--DpKULo7UzaFBXZ0wzS0tCTUE/view?pref=2&pli=1 pp. 2.
[153] Saulkrastu novada ilgtspējīgas attīstības stratēģija 25 gadu perspektīvā,data retrieved from http://www.saulkrasti.lv/images/stories/Attistibas_dokumenti/Saulkrasti-Stratija_Final_30-04-13.pdf , pp. 13.
[154] Ibid, pp. 11.

into the sea. It is topical in case of Saulkrasti, because there is a priority set on small vessel attendance and, if necessary – maintenance.

"For visitor well being and faster reach of the sea, construction of new parking lots is planned. It is one of core elements for developing tourism infrastructure. Construction of new buildings should be made in environmentally friendly way - building near the coast (at least 150 meters away from the coast) is not prohibited, but should be done in a way that does not prevent visitors' access to the sea. Construction development should be planned in accordance with sewerage system development."[155]Although it is a good call that municipality recognizes the need to develop sewerage system in accordance with new construction development areas, other priorities lead to conclusions on possible degradation of the environment. It is considered in the strategy, that new parking lots are needed for better sea access; also new buildings can be built in near coast areas. Building of this kind can create increase in load and could damage the fragile dune system and trigger the erosion.

"While planning the territory and building of new houses, special erosion territories should not be constructed on. If there are objects, roads or houses that are located in erosion areas, relocation of these objects should take place."[156] There are two erosion reduction activities planned – 1) no construction; 2) relocating of objects subjected to erosion. Option of retreat is seen as a priority for safeguarding the areas subjected to erosion, there are some cases when it is the best option. Based on personal experience, author concludes that main reason for interest in erosion reduction activities could be due Saulkrasti municipality main road closeness to the sea.

Some problems regarding Saulkrasti are also mentioned in the strategy: "1) there are many weekend houses in the area, but they are on other land – Limbaži or Sēja, which makes it difficult to invest money in improvement of infrastructure; 2) mobility problems that could be resolved by development of public transport infrastructure and development of cycle paths; 3)intensification of existing building areas is problematic because there are not many free spaces left, forests are out of question in this case."[157] The problem with summer houses is that they are not really paying taxes to the municipality, but they are using municipality resources. This makes not only development of infrastructure, but also maintenance of sewage system difficult. Mobility

[155]Saulkrastu novada ilgtspējīgas attīstības stratēģija 25 gadu perspektīvā,data retrieved from http://www.saulkrasti.lv/images/stories/Attistibas_dokumenti/Saulkrasti-Stratija_Final_30-04-13.pdf pp. 8
[156]Ibid, pp. 25.
[157] Ibid, pp. – 20 -23.

problems is also a big issue in the municipality, because there are almost no transport that would go through the municipality, so people need to seek for other solutions (although there is a possibility to get on the train or intercity busses that are driving through the municipality). "It is a long term priority to develop sewage system in territory of summerhouses. Future priority is to connect main sewerage system with territory of summerhouses, where only partial solution is acquired and most of the waste water is being pumped directly into environment." [158] Contemporary situation shows that existing sewerage system is insufficient and in poor technical condition, because summerhouses account for waste water direct pumping into environment. It is well acknowledged fact and actions towards improvement of sewerage systems are taking place.

Education and information on environmental issues are not the priority that is mentioned in the strategy of the municipality. No further comments can be made on the issue.

It can be concluded that in Saulkrasti municipality strategy, priorities that can help to sustain the environment are not of highest importance, because, although sewerage system development and erosion reduction activities are foreseen, other important priorities such as sustainable tourism and inhabitant education on environmental issues is not set as a priority. Actions with potential of damaging of the environment of the Baltic Sea and the coast, such as port and industry development, construction of new formations (especially near the fragile environmental formations) and tourism development with no priority of tourist flow planning is foreseen in the strategy.

3.13. Ventspils municipality

In order to examine priorities of Ventspils municipality, development strategy till year 2030 was analyzed. It consists of 42 pages, and incorporates information on contemporary situation, strategic part and spatial development perspective. "Municipality occupies 2457 km^2area. Total number of inhabitants in year 2014 was 12 890 with density of 5 people on 1 km^2."[159] Ventspils municipality is also facing population decrease, as it can be seen in the table no 3. Usually in these cases strategy should be directed either on using of existing human capital or on population increase.

[158]Saulkrastu novada ilgtspējīgas attīstības stratēģija 25 gadu perspektīvā,data retrieved from http://www.saulkrasti.lv/images/stories/Attistibas_dokumenti/Saulkrasti-Stratija_Final_30-04-13.pdf pp.10.
[159] Ventspils novada ilgtspējīgas attīstības stratēģija 2030, retrieved from http://www.ventspilsnovads.lv/images/stories/Attistibas_nodala/2015/IAS/Ventspils_novada_IAS.pdf pp. 5 - 6.

"Sewerage system is available in all 12 main villages. For the sake of economic development renovation of existing sewerage system is in order. "[160] Although plans for renovation are in accordance to economic development, it is still a priority that can help to maintain the environment of the Baltic Sea and thus is acknowledged as a priority towards environmental issues.

Strategic objectives and priorities are set in three core elements – "society, economy and living space."[161] Society and it`s well being is positioned as a core principle in this document. "Resident of Ventspils municipality will have possibility to obtain education in every age (also by lifelong learning), health care is a core priority for persons well being, active cultural life will maintain the connection between the person and his connection to the municipality and his roots."[162] For well being of the residents of the municipality, economic development is another core objective. "Priorities are connected with development of industry (products of high value added), agriculture, forestry, tourism and other industries. Tourism is one of the core principles for development of the economy. Future specializations will be connected with extraction of mineral resources and renewable energy production (wind generators)."[163] Economy and living space conditions can not develop without proper infrastructure. "Mobility is secured by development of infrastructure – roads, public transportation. For maintaining the coastal area, special complex of measures is carried out for the purpose of future development possibilities."[164]

When planning new building constructions, assessment of the impact on environment should be made. "It is prohibited to build new houses in sensitive areas, such as dunes or coast and make these areas unavailable to visitors or other inhabitants. Dunes and coasts are of national value. When possible renovation of old buildings should take place instead of constructing of new ones. Population distribution system should be maintained in a balanced way –number of houses is coherent with economic development (job possibilities) and available services."[165] Construction planning in Ventspils municipality can be considered as coherent to environmental preservation, because it is stipulated that assessment on the environment should be made and before constructing new buildings possibilities of reconstruction of old ones should take place.

---

[160] Ventspils novada ilgtspējīgas attīstības stratēģija 2030, retrieved from http://www.ventspilsnovads.lv/images/stories/Attistibas_nodala/2015/IAS/Ventspils_novada_IAS.pdfI pp. 8., pp. 28.
[161] Ibid, pp 15.
[162]Ibid, pp. 16.
[163] Ibid.
[164]Ibid, pp16.
[165]Ibid, pp. 28.

There is no information on education and information on environment being set as a priority. There is also no information on the need of erosion reduction activities. Judging by erosion map, presented in theory (picture 1), Ventspils municipality has areas that are subjected to erosion risks (retreat from 11 – 70 m is foreseen). It can be suggested for the municipality to revisit strategy and incorporate a priority in maintaining the coast in a way that prevents the threat of erosion.

In conclusion it must be said that Ventpils municipality has set priorities mostly accountable for well being of it`s residents. Environmental issues are also incorporated in the priority list, but often it can be seen as a co- priority for further development of the industry, infrastructure and economy. Some core elements of environmental protection are incorporated in the strategy because of national laws.

3.14. Rīga city

Rīga is the capital city of Latvia; it could mean that development priorities will be different from other municipalities that were previously examined. To develop knowledge on priorities set by the city, sustainable development strategy till year 2030 was analyzed. It consists of 90 pages and incorporates information on city mission, future perspectives, development visions and objectives, territorial specialization and spatial development planning. It is the biggest city in the country "that occupies 304,05 km^2 are with total population of 643 620 inhabitants. Core elements of the city are society (core element of the municipality), economy and urban environment. Strategy is developed to increase population, economic activity and to maintain core principles of the capital city."[166]Only priorities that could affect the environment near the Baltic Sea and sea itself will be examined.

Essential priority is industry development. "Main sectors are port development, transport and logistics infrastructure, chemical industry, computer technologies, manufacture of metal products and cars, tourism and education."[167] Regarding port development, vision is that "in year 2030 port will still be significant regarding the Baltic Sea transit. Substantial investment has been put into development of the port. It is acknowledged that areas near the port are affected by activities

[166]Rīgas ilgtspējīgas attīstības stratēģija līdz 2030. gadam, retrieved from : http://www.rdpad.lv/wp-content/uploads/2014/11/STRATEGIJA_WEB.pdf pp. 10 -12, pp. 15.
[167]Ibid, pp. 27.

in the port – living environment in these areas should be improved."[168] It is acknowledged that closeness to the port may result in unhealthy life conditions and improvement is in order.

When planning to develop constructions or new formations, "climate change and natural processes, such as erosion and floods need to be respected. Building of houses should be limited; firstly degraded areas should be maintained. In developing of water resources (Baltic Sea and the coast) potential load increase brought by tourism and new inhabitants needs to be evaluated with regard to positive and negative impacts on sensitive territories safeguarding measurements should be anticipated."[169]Attention is brought upon erosion risk factors and the need to safeguards the environment. One the other hand, "for better access to the beach, new parking lots construction and development of walking tracks could take place."[170] Although tourism development near the sea is not foreseen in the strategy, this area is and will be used by inhabitants of the city for recreational purposes, anthropogenic load is not calculated. Construction of new parking lots could damage the sediment and make it vulnerable.

Sewerage system maintenance is also a priority "contemporary situation is in good condition, but renovation is needed for centre area. Regarding future plans on new construction building sights and industry development sights, development of inclusive sewerage system is needed.."[171] It is a good call that municipality realizes that more buildings can be responsible for more waste water development.

There is no information regarding education on environmental issues. Development strategy is full of information on society and green park development in the city centre. As it was stated before, Rīga is a capital city that has wide range of possibilities for economic development, use of the sea and coast are of medium importance. Although priorities that have been chosen by study author are mentioned and addressed in the strategy, biggest emphasis is brought upon other priorities regarding capital city development issues rather than using of the coast for tourism development purposes.

[168] Rīgas ilgtspējīgas attīstības stratēģija līdz 2030. gadam, retrieved from : http://www.rdpad.lv/wp-content/uploads/2014/11/STRATEGIJA_WEB.pdf pp. 75.
[169]Ibid, pp. 51.
[170] Ibid, pp. 65
[171]Ibid, pp. 60.

3.15. Ventspils city

To find priorities set by the Ventspils city, development strategy till year 2030 was analyzed. It consists of 39 pages and includes an overview of contemporary situation, future mission, long term goals, city specialization and spatial planning perspectives. "There were 41,4 thousand inhabitants in the city, in year 2013. City occupies 58 km^2 area, with inhabitant density 714 on $1km^2$."[172] Ventpils city is facing population decrease, as it can be seen in previously obtained information presented by Central Statistical Bureau.

Core priority has been set – "of high importance is population increase. For city future development it is essential that number of inhabitants will increase – that will be possible because of job security and good salary and good living conditions."[173] Three core priorities are set for the strategy – society, economy and urban environment – every one of them has sub - priorities.

First core priority is economy. "Development of economy will assist in industry development and in increase of population. Sub – objectives are 1) cooperation between entrepreneurship and education / science; 2) energy efficiency; 3) development of innovation. Development of tourism falls under this objective as well. Baltic Sea and it`s coast is seen as a resource for tourism development."[174]Ventspils city in this strategy is positioned as port city with developing industry. "Main reason for Ventspils port competitiveness is Ventspils free – port that is also an ice – free port that can operate throughout year and can accept any size vessels that may come into the Baltic Sea. Future objectives are: 1) development of Ventspils free port and industries, construction of infrastructure; 2) tourism development (especially for families with children); 3) cooperation between different industry sectors; 4) development of infrastructure that will make city more accessible. "[175]Development and overuse of port resources, with priority to make even bigger development, could lead to damaging the environment of the Baltic Sea.

Strategy set for society foresees "that it will be educated, active, creative, healthy and family – oriented. Further objectives foresees: 1) development of schools; 2) entertainment and culture possibilities; 3) range of services – social help, health care and others.It is foreseen that Ventspils city could become an industrial centre and transit development country in the Baltic

[172]Ventspils pilsētas ilgtspējīgas attīstības stratēģija līdz 2030. Gadam, retrieved from http://www.ventspils.lv/files/dokumenti/attistibasprogramma/ventspils_strategija_2030_27_12_2013.pdf pp 7 - 8
[173] Ibid, pp. 16 – 17.
[174] Ibid,pp. – 19.
[175]Ibid, pp. 10.

Sea region. That would give better possibilities for the society to have jobs, accurate salary and chance to develop family in this city."[176] Every priority set out in the strategy is coherent with strategic plan to increase population, but it is not coherent with safeguarding the environment.

Urban environment is also a key factor for population increase. "It is essential for inhabitants to have a good and healthy environment, possibility to get near the sea and green territories. Sub-objectives are: 1) infrastructure development; 2) good waste water treatment; 3) energy -efficiency etc."[177]Infrastructure development could increase load on the environment, it is of high importance that city sees the need in better waste water treatment, but there are no further priorities set regarding this question.

Based on information obtained in the theory on areas subjected to erosion, Ventspils city is also facing erosion risk, there is accumulation before the port and quite big (21 – 30 m) retreat when looking on the right from the port. Erosion reduction activities need to take place, because port territory is subjected to this matter.

No information on education and information on environmental issues are mentioned in the strategy. Although it is a soft measure, it still could be used in order to safeguards the environment, because, as it is mentioned in the strategy, increase in population is foreseen as a future subjective.

In the strategy reference to European Union strategy for the Baltic Sea region[178] is made, but there is no evidence that part on sustainability of the sea environment is used developing the strategy. It helps to further assume that only priorities regarding social and economic sustainability was used. It must be concluded that Ventspils city development strategy is focusing on economic and social capital increase (port and tourism development and others), with only a little focus brought upon environmental issues (sewerage system maintenance and no plans for new construction formations).

[176]Ventspils pilsētas ilgtspējīgas attīstības stratēģija līdz 2030. Gadam, retrieved from http://www.ventspils.lv/files/dokumenti/attistibasprogramma/ventspils_strategija_2030_27_12_2013.pdf, pp. 20, pp-22, pp. 24..
[177]Ibid, pp. 22.
[178]Ibid, pp. 4.

3.16. Liepāja city

To understand the priorities of Liepāja city municipality, sustainable development strategy till year 2030 was analyzed. The strategy consists of 48 pages and includes strategic part, spatial development perspective and trends affecting the development of the city. In strategy 1 core goal is set "to strengthen the role and visibility of Liepaja internationally, it will attract investments, tourists and well – informed specialists."[179] Liepāja city is also affected by population decrease, and it is understandable, that city wants to develop and attract investments and people.

The strategy insists that economical development in municipality is needed; there are many traditionally strong sectors that are the basic for development in the municipality, such as "manufacture of metal products, textile production, port and logistics, trade, repair and construction." [180] Previously mentioned sectors are the basic sectors, but in the strategy municipality sets an objective to develop also "food production, wood-processing, fisheries and fishing, commercial services." [181] As perspective sectors strategy defines such fields as "rehabilitation and health tourism, culture and sport, energy, communication services."[182] In a situation where HELCOM is trying to fight with such issues as eutrophication, overfishing and others, some of these development spheres could be challenging regarding this document. Nothing is mentioned about developing or better maintenance of waste system in the scenario where industrialization takes place.

Main focus in strategic plan is brought upon the possibility to reach municipality by different means of movement. "Main resource is the harbor – investments need to be made in order to increase the volume of cargo and port capacity. Because of economic activity and attractiveness of the city, building of new ferry line and yacht harbor development is possible. There is a plan to renew the airport with flights from East to West. Construction of new and rebuilding of old bicycle paths is needed, with connection to European cycling route. "[183] It was mentioned in theory, that harbors are responsible for such things as oil spills, hazardous substances and others. If we take into account that municipality also wants to renew airport that would help the climate change to continue to develop.

[179] Liepājas attīstības straeģija līdz 2030 gadam , retrieved from http://www.liepaja.lv/upload/attistibas_strategija/ilgtermina_attistibas_strategija_2030.pdf pp. 14, pp. 19.
[180] Ibid, pp. 19.
[181] Ibid, pp.20.
[182] Ibid, pp.21.
[183] Ibid, pp. 10-11.

Regarding tourism, priority is set to "become a health resort city. Visitors from Latvia, Europe and all around the world will visit the city for recreational purposes."[184] No further information on tourism maintenance or development of health resorts is mentioned. Although, as it`s priority is creation of health resorts, it must be considered as a potential threat for the environment and sediment.

3.17. Jūrmala city

To understand the priorities of Jūrmala city municipality, Jūrmala city development strategy 2010 – 2030 was analyzed. The strategy consists of 61 pages and it was written considering the situation of municipality in years 2009 – 2010, previous planning documents and development trends in the world. It incorporates such topics as strategic objectives, priorities and common interests with other municipalities.

Jūrmala is one of the 9 cities in Latvia. "It is located between river Lielupe and Riga seashore, it occupies 25 km long territory and has 150 – 200 m wide white sand beach.Data shows that here live 56 thousand of inhabitants. Relief, climate and nature structure (sandy coasts, dune forests, mud etc.) form resources for health resort development."[185]

Tourism and health resort development is seen as a core priority for future developments. "By year 2030 Jūrmala will be a well known health resort city. It will develop even more facilities for this purpose. Strategy foresees renovation of old health resorts and building of news facilities. Beach will be a place for active leisure time spending. Measures for development of the resort facilities are as follows: 1) obtaining of health resort city status, 2) Ķemeri as a main health resort facility, 3) the protection of environmental resources needed for health resort development, 4) development of promenade on the beach." [186] Although protection of natural resources is mentioned as one of the measure in order to obtain health resort city status, it can not be considered as a way of sustainable development. Construction of new facilities and use of natural resources available because of the closeness of the sea, can damage the environment and sediment. Development of any big industy is not foreseen in the strategy, it is not connected with Jūrmala city image.

[184]Liepājas attīstības straeģija līdz 2030 gadam , retrieved from http://www.liepaja.lv/upload/attistibas_strategija/ilgtermina_attistibas_strategija_2030.pdf pp. 13.
[185] Jūrmalas pilsētas ilgtspējīgas attīstības stratēģija 2010 – 2030, retrieved from http://www.jurmala.lv/docs/i10/x/i100825_Strategija_2010-2030.pdf , pp. 3-5.
[186] Ibid, pp. 15., pp 18 -20.

From environmental protection perspective focus should be brought upon:"1) development of Lielupe harbor; 2) construction of new bridge over river Lielupe; 3) increase in services offered at the coast and development of walking track on the beach. These initiatives can improve the quality of environment and it`s availability to inhabitants and tourists, but it also can cause undesirable effects on natural resources."[187] It is mentioned in strategy itself that there are plans that could have influence on natural resources and environment itself. For example, if we speak about walking tracks, it is essential to know from what material and where on the coast it will be placed (dunes, beach etc.), because this can not only help the environment, but also damage it, the material used is bringing more load on the sediment.

Jūrmala city strategy foresees "the building of a pier to extend Turaidas street for construction of café or a restaurant."[188] Previously mentioned development of Lielupe harbor and this planned pier construction into the Baltic Sea could cause sediment accumulation or retreat by that increasing erosion threat.

Existing threat of erosion is acknowledged in the part on threats for the development, but recognition of this fact has not resulted in strategy to make it at least a second range priority. Judging by the erosion map, available in the theory, there are some areas (for example Lielupe basin) where erosion risk exists (retreat to 30 m is possible). Although this is not an immediate threat, it should be incorporated in the strategy, because of future development trends (construction of pier, harbor and health resort).

Sewerage system maintenance is described as inconvenient because Jūrmala city is a long city and maintenance is costly. "There is an ongoing project for sewerage system development and connecting the areas that did not have access to the system before (future perspective is to connect also those areas where summer houses are constructed)."[189] Existing situation is not sufficient in safeguarding the environment; poor waste water treatment may result in increased eutrophication threat.

[187] Jūrmalas pilsētas ilgtspējīgas attīstības stratēģija 2010 – 2030, retrieved from http://www.jurmala.lv/docs/i10/x/i100825_Strategija_2010-2030.pdf, pp. 18.
[188] Ibid, pp. 36.
[189] Ibid, pp. 25., pp. 30.

It must be concluded that although development strategy foresees some priorities regarding the natural preservation, priorities set by Jūrmala city has a potential of harming the environment, natural resources and the Baltic Sea.

3.18. Summary on 6 priorities regarding 17 coastal municipalities

	Rīga	Liepāja	Ventspils	Jūrmala	Carnikava	Dundaga	Engure	Grobiņa	Limbaži	Mērsrags	Nīca	Pāvilosta	Roja	Rucava	Salacgrīgva	Saulkrasti	Ventspils mun.	Total
1. Renovation and maintenance of sewerage system	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	15/17
2. Education and information on environmental issues	-	-	-	-	+	+	-	+	-	+	-	+	-	-	-	-	-	5/17
3. Ports and industry development. Constr. or reconstr. of piers	+	+	+	+	(+) industry	-	+	(+) industry	-	+	+	+	+	+	+	+	(+) industry	15/17
4. Constructions of new formations	+	-	-	+	-	-	+	+	+	+	+	-	+	+	+	+	-	11/17
5. Erosion reduction activities	+	-	-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	4/17
6. Sustainable tourism with touris flow planning	+	-	-	-	+	-	+	+	+	-	+	+	+	-	-	-	-	8/17

Table. 4. **Summary on 6 priorities regarding 17 coastal municipalities development strategies**

Data obtained from 17 development strategies shows in how many municipalities 6 priorities, previously chosen by study author, are important. Regarding obtained data it can be assumed that sewerage system development and maintenance is a priority discussed in 15 municipalities (it is not a priority in Liepāja city and Grobina municipality).

Education and information on environmental issues is regarded as soft measure that is showing a good will of the municipality, because although people know the facts on environmental protection, they still can ignore the necessity of environmental protection. But incorporation of this priority into development strategy indicates the attitude of local government. From 17 analyzed municipalities, only 5 have incorporated this priority in their sustainable development strategy.

Planned ports and industry development may cause possible increase in maritime accident risks that could result in pollution risks, ship source pollution or wastewater discharge into the sea. In some cases industry development can cause environmental losses. This priority was chosen by 15 out of 17 municipalities (12 of them set the priority of port and industry development, 3 – Carnikava, Grobina and Ventspils municipality set the priority of industry development). It was mentioned in the theory that port construction or development, and increase in transshipment of goods can result in environmental loses and degradation of the Baltic Sea. Clean shipping and good quality port maintenance is in order for protection of the environment.

Construction of new formations (parking lots, housing facilities etc.) is set as a priority in case of 11 municipalities. More than half of development strategies is incorporating either parking lot development near the coast or house building in the sensitive area (protection zone law is mentioned in these cases, building is prohibited in 150 – 300m zone). Retreat from fragile coastal sediments should be foreseen, because human activities can decrease biodiversity, sediment and other important objects.

In the theory problem of erosion was discussed. One of the simplest ways how to deal with this threat, is to retreat from vulnerable sediments and make constructions towards inland. Previous data shows that this scenario is chosen by only 6 municipalities. In the theory erosion map was presented, the information indicates, that every municipality has at least one area that is facing erosion threat (in some areas it is almost invisible 11 – 20 m, but in some areas it exceeds 50 meters). After analyzing development strategies of municipalities, it must be concluded that

only 4 municipalities consider erosion reduction activities as a priority. With development of ports and industry, sediment can be damaged and coast can be subjected to erosion.

Last priority chosen by study author was sustainable tourism with tourist flow planning. Coastal municipalities see the Baltic Sea as a resource for development. Tourism development is not a forbidden core of action, but in order to preserve the resource that is owned by the municipality and have a possibility in further development and recreation, tourist flow planning and other preserving activities need to be addressed. After studying all 17 development strategies of coastal municipalities, it must be concluded that only 8 of them have set the priority of sustainable tourism development, although all of them see possibilities regarding his resource and have named tourism development as one of core priorities.

It then must be acknowledged that priorities set by 17 coastal municipalities have a potential of harming the environment of the Baltic Sea (sea itself or natural formations allocated near it).

Conclusion

Baltic Sea can be considered as a resource that Latvia (and also it`s coastal municipalities) are sharing with other countries. Regarding Baltic Sea waters, there are indicators that can be influenced by all countries around it. If we speak about coastal formations, such as dunes, beaches and others, main influence is made from municipalities that are allocated in the area.

In theoretical part of the research literature on such topics as 1) coastal and dune maintenance, 2) human activities, 3) tourism impact, 4) climate change and erosion was gathered. Also international context of safeguarding of the Baltic Sea, incorporating HELCOM – Baltic Sea Action Plan and European Union strategy for the Baltic Sea region, was examined. Regarding obtained information, study author chose 6 priorities (renowation and maintenance of sewerage system, education and information on environmental issues, ports and industry development, constructions of new formations, erosion reduction activities and sustainable tourism with planned tourism flow) by which further analysis of 17 coastal municipalities was carried out.

While examining development strategies of Latvian coastal municipalities, information on safeguarding of special area of conservation is not regarded as the priority for sustainable tourism or development, because national laws are forbidding exploiting these unique formations. It is not a choice that coastal municipalities have made by themselves; it is a necessity regulated by national laws and initiatives.

After researching all 17 coastal municipalities, it can be argued that in existing development strategies, coastal and sea related environmental issues have been integrated in a relatively poorly way. In fact, in many strategies they are mentioned only as much as is required (included as a small comment with only indicative meaning).

It is important to supervise activities and priorities named in the strategies, because, although in the outline activity could be presented as coherent with environmental processes and conservation, lack of detailed description on the issues prohibits to make deeper analysis on potential harm to the environment in some cases.

In almost all coastal municipalities that were analyzed, closeness to the sea is seen as a resource that needs to be used in interests of the municipality. Environmental issues and especially those considered by international organizations are poorly or not at all mentioned.

It can be further stated that hypothesis has been confirmed - development strategies of coastal municipalities are focused on priorities that have potential of harming the environment of the Baltic Sea.

In terms of further research it would be preferable to cross - examine the data obtained from development strategies with other planning documents (such as programs and plans of municipality), because nevertheless development strategies are core documents in further development, they lack on concrete action and priority description. It would also be useful to cross – examine 17 coastal development strategies (or other documents) with different kind of priorities taken from theory and international document perspective. Secondly, research would benefit from interviews with head of every coastal municipality, which would give more insight information on municipality specific priority setting, according their future development plans.

Literature

- Briede, M. Kļaviņš et. al. ,*Klimata mainība un globālā sasilšana*, Latvijas Universitāte, 2008.
- McLachlan, A. Brown, *The Ecology of Sandy Shores*, Second Edition, Elsevier, USA, 2006.
- Ruskule, et. al., Baltic Environmental Forum, *See the Baltic Sea, Unique assets we share*, 2009.
- J. Duxbury, S. Dickinson, *Principles for sustainable governance of the coastal zone: In the context of coastal disasters*, EcologicalEconomicsJournal, Voulme 63, issues 2-3.
- J. Harff, S. Bhorck, P. Hoth, *The BalticSea Basin*, Springer, 2011.
- J. Lapinskis, G. Eberhards, *Jūras krasta erozija Latvijā : Problēmas un cēloņsakarības*, Piekrastes Ilgtspējīga Attīstība: Sadarbības Pārvaldība, Rīga, 2008.
- M. Reckermann, K. Brander et. al., *Climate Impacts on the Baltic Sea: from science to policy*, Springer – Verlag Berlin, 2012.
- P. M. Barnes, I. G. Barnes, *Environmental Policy in the European Union*,1999, Edward Elgar Publishing Limited, Cambridge.
- P. W. Sutton, *The Environment a sociological introduction*, 2007, PolityPress, Cambridge.
- Peter W. French, *Coastal Defences: Processes, Problems, Solutions*,Routledge, 2001.
- Piekrastes apbūves vadlīnijas, latvijas lauku tūrisma asociācija “Lauku ceļotājs”, 2010.
- S. Wiliams, *Tourism Geography*, Routledge, 1998.
- The BAAC Author Team, *Assesment of Climate Change for the Baltic Sea Basin, Past and Current Climate Change*, Springer, 2008.
- U. Schiewer, *Ecology of Baltic Coastal waters*, Springer, 2008, Gulf of Riga and Parnu Bay.
- Vadlīnijas jūras krasta erozijas seku mazināšanai, Latvijas Universiāte, 2014.

Resources

- About Us, HELCOM homepage, retrieved from : http://helcom.fi/about-us
- Aizsargjoslu likums, retrieved from : http://likumi.lv/doc.php?id=42348
- Central statistical bureau, data, change in population, retrieved from : http://data.csb.gov.lv/pxweb/lv/Sociala/Sociala__ikgad__iedz__iedzskaits/IS0120.px/?rxid=cdcb978c-22b0-416a-aacc-aa650d3e2ce0
- Centre for Climate Adaptation, retrieved from : http://www.climateadaptation.eu/latvia/coastal-erosion/
- Dundagas novada ilgtspējīgas attīstības stratēģija 2014 – 2030 gadam, data retrieved from http://www.dundaga.lv/files/2014/3/1/Dundaga_ias_projekts.pdf
- Engures novada ilgtspējīgas attīstības stratēģija 2013 – 2030, data retrieved from http://www.enguresnovads.lv/uploads/filedir/Engures_novada_ilgtspejigas_attistibas_strategija_Projekts_1.pdf
- European Union Strategy for the Baltic Sea Region, Action Plan, 2009, retrieved from http://www.mfa.gov.lv/images/2015_09_11_ACTION_PLAN_FINAL_2015.pdf
- F. Hauser, et. al., *Municipal Development Strategy process, A toolkit for practioners*, VNG International, The Netherlands, 2010, http://www.vng-international.nl/wp-content/uploads/2015/06/Toolkit_Municipal_Development_Strategy_Process_ENG.pdf
- Grobiņas novada ilgtspējīgas attīstības stratēģija 2014 – 2030, http://www.grobina.lv/index.php?option=com_content&view=category&layout=blog&id=237&Itemid=279
- Grobiņas novada oficiālā mājas lapa, data retrieved from : http://www.grobina.lv/index.php?option=com_content&view=category&layout=blog&id=111&Itemid=121
- Grupa 93, Nīcas novads, prioritāri attīstamās teritorijas, retrieved from : https://drive.google.com/file/d/0B--DpKULo7UzNFZEZUc1SkdNVXc/view
- Grupa 93, Saulkrastu novads, prioritāri attīstāmās vietas, data retrieved from https://drive.google.com/file/d/0B--DpKULo7UzaFBXZ0wzS0tCTUE/view?pref=2&pli=1
- HELCOM reccommendation 28E/ 5, Municipal wastewater treatment, 2007
- HELCOM reccommendation 28E/9, adopted 15 November 2007

- HELCOM, Baltic Sea Action Plan, HELCOM Ministerial meeting document, Krakow, Poland, 2007
- HELCOM, BS Environment Proceedings No. 133, *Approaches and methods for eutrophication target setting in BS region*, 2013
- Introduction : Baltic Sea overview, Coastal Guide, retrieved from : http://www.coastalguide.org/icm/baltic/
- Jānis Lapinskis, *Jūra samazina Latviju*, Vides Vēstis mājas lapa, data retrieved from : http://www.videsvestis.lv/content.asp?ID=134&what=46
- Jūrmalas pilsētas ilgtspējīgas attīstības stratēģija 2010 – 2030, retrieved from http://www.jurmala.lv/docs/i10/x/i100825_Strategija_2010-2030.pdf
- Latvian coastal municipalities discussing perspectives on innovative marine use, Sustainable uses of Baltic Marine Resources, data retrieved from : http://www.submariner-project.eu
- Liepājas attīstības straeģija līdz 2030 gadam , retrieved from http://www.liepaja.lv/upload/attistibas_strategija/ilgtermina_attistibas_strategija_2030.pdf
- Limbažu novada ilgtspējīgas attīstības stratēģija 2013 – 2030, retrieved from : http://www.limbazi.lv/images/stories/dokumenti/planosanas_dolumenti/Ilgtspejigas_attistibas_strategija_.pdf
- Mērsraga novada telpiskās attīstības stratēģija, 2011 retrieved from http://www.mersrags.lv/Dome/TeritorijasPlanojums/Terit_planojums_2011_L/Mersraga_TelpiskAS_teksts&shema.pdf
- Nīcas novada ilgtspējīgas attīstības stratēģija 2014 – 2030. Gadam, retrieved from http://www.nica.lv/wp-content/uploads/2013/09/N%C4%ABcas-novada-ilgtsp%C4%93j%C4%ABgas-att%C4%ABst%C4%ABbas-strat%C4%93%C4%A3ija-2014.-%E2%80%93-2030.-gadam.pdf
- Pāvilostas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.pavilosta.lv/upload/Pavilostas%20novada%20strategija%202030_27_04%282%29.pdf
- Rīgas ilgtspējīgas attīstības stratēģija līdz 2030. gadam, retrieved from : http://www.rdpad.lv/wp-content/uploads/2014/11/STRATEGIJA_WEB.pdf
- Rojas novada ilgtspējīgas attīstības stratēģija 2015 – 2030, retrieved from : http://www.roja.lv/upload/docs/AttNod/2015/Rojas%20novada%20IAS-projekts.pdf

- Rucavas novada ilgtspējīgas attīstības stratēģija 2013 0 2038. Gadam, retrieved from http://www.kurzemesregions.lv/userfiles/files/Rucava_IAS_1redakcija_apspriesanai.pdf
- Salacgrīvas novada ilgtspējīgas atīstības stratēģija 2015. – 2038. Gadam, retrieved from : http://www.salacgriva.lv/files/news/31883/salacgriva_ias_gala_apst.pdf
- Saulkrasti municipality homepage, data retrieved from : http://www.saulkrasti.lv/index.php/lv/novads
- Saulkrastu novada ilgtspējīgas attīstības stratēģija 25 gadu perspektīvā, retrieved from http://www.saulkrasti.lv/images/stories/Attistibas_dokumenti/Saulkrasti-Stratija_Final_30-04-13.pdf
- United Nations Environment Programme official homepage, *Tourism`s three main impact areas*: http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/TheTourismandEnvironmentProgramme/FactsandFiguresaboutTourism/ImpactsofTourism/EnvironmentalImpacts/TourismsThreeMainImpactAreas/tabid/78776/Default.aspx
- Ventspils novada ilgtspējīgas attīstības stratēģija 2030, retrieved from http://www.ventspilsnovads.lv/images/stories/Attistibas_nodala/2015/IAS/Ventspils_novada_IAS.pdf
- Ventspils pilsētas ilgtspējīgas attīstības stratēģija līdz 2030. Gadam, retrieved from http://www.ventspils.lv/files/dokumenti/attistibasprogramma/ventspils_strategija_2030_27_12_2013.pdf

Master paper „Development Strategies of Latvian Coast Municipalities and Their Impact on Safeguarding the Environment of the Baltic Sea" elaborated in the Faculty of Humanities at the University of Latvia.

Herewith I confirm by putting my signature that the research has been conducted individually, as well as the fact that only the indicated sources of literature have been used in the paper and that the electronic copy of the paper corresponds to the printout.

Author : Agnese Ančupāne _____

I reccommend the paper for defense

Advisor : Ph. D.. Kristīne Āboliņa _____

/signature and date/

Opponent : Prof. Biruta Sloka _____
/ signature and date/

Paper submitted in the Department of Latvian and Baltic Studies _____

Person authorized by the dean : Dr. Hist. Inese Runce _____

(signature)

Paper has been defended in the session of the Commision on Master Graduation Examination _____, Minutes No. _____
(date)

Secretary of the Commission : Dr. Hist. Inese Runce _____
(signature)