

# The Visual Elements Forming the Identity of the Baltic Sea and Gulf of Riga Coastal Landscape

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**Abstract.** The impact of globalization makes one think about the identity of the Latvian landscape, particularly the rapid changes in the coastal landscape, which are connected both with nature's processes and human activities. Recognizing of landscape identity is closely connected with the identification, survey and description of its forming elements, since the landscape elements are the key to landscape perception, and these elements play one of the determining roles of identity formation. The main elements forming the landscape identity are: visual, historical and cognitive. The method of landscape recognisability is based on the research and identification of a sequential group of landscape forming elements, combining under each stage in the field of landscape research cartographic and descriptive methods and approaches. This research is a part of a combined identity determination with the purpose of defining the visual elements forming the landscape. The aim of this research is to study the visual elements forming the identity of the Baltic Sea and the Gulf of Riga coastal areas, to classify the landscape according to the characteristics of its visual perception, putting in the forefront the features which are characteristic of a coastal area. The research was carried out over the period of October 2010 to March 2011. The chosen stretch of land Ainaži – Salaca is 14 km long, occupying 11.3 km<sup>2</sup>. It lies in the north-eastern part of the Baltic Sea and Gulf of Riga, north-western part of Vidzeme. The research on the visual elements forming the identity of the Baltic Sea and Gulf of Riga coastal landscape in the area from Ainaži to the river Salaca is based on the visual survey of the landscape, using landscape matrixes. The survey matrix consists of two parts – characterization of the combined image and a recording of typical landscape elements. 50 characteristic and unique landscapes were chosen over the whole researched area. As a result, basing on SPSS data, a characteristic visual landscape type and its forming elements, their interaction, which is one of the forming parts of landscape identity, were formulated.

**Keywords:** landscape identity, visual assessing, coastal areas, landscape elements, visual aesthetics.

## Introduction

Globalization as a comprehensive phenomenon is not possible to define, determine its form of expression or content, clearly – globalization embraces and transforms everything from each person's inner world and ending with the physical changes we are watching in the landscape [14, 2]. The impact of globalization in Europe seems to wonder about the identity of the landscape, especially, in sensitive regions of the countryside, such as the coastal landscape. In Latvia, under the influence of globalization we are experiencing rapid changes exactly in the coastal area of the Baltic Sea and the Gulf of Riga subject to the impact of both natural processes and human activity.

From ancient times to the present day, the coastline attracts people – some for permanent accommodation, others for the summer season as well as tourists and researchers. It should be noted that on the coast due to storms and coastal erosion there are difficult living conditions but the coast is the force of gravity, which is often bound with unusual natural handicaps, with a special aura and unique in a sense as the coast is unique on the Latvian scale. Historically, the coast has been concentrating a considerable number of inhabitants and for a long time there has been an intensive human economic activity. There have been built up

and there are still specific, enough natural and aesthetically appealing but very fragile, sensitive to human activities natural features and landscapes that are an excellent value. Over a long period, on the coast there is created a peculiar cultural environment and each site has a unique cultural heritage. Today, the landscape is characterized by the use of power and the territorial expansion of human activities. This is demonstrated by the expansion of towns and villages, a new type of building construction in the countryside, tourism development, road infrastructure, including the development of the oil port terminal building, wind energy and other actions [21].

The Baltic Sea research nowadays is widely represented in many areas – in economy and sustainable development, policy and government cooperation, ecology, nature protection and management. The research of the coastal landscape of the Baltic Sea and the Gulf of Riga mainly emphasize the biological value of the coast, habitat protection and management in Latvia, which are also included in the project “Natura 2000” of the European Union's fund “LIFE–Nature”. Within the project, there have been surveyed and mapped all the coastal habitats and conservation and management plans have been developed [29]. The European Environment Agency

attracts the public awareness to all the European coastal changes – degradation, the increase of built – up and artificial areas [10] Latvia is currently in a similar situation. The coastal utilization, planning and management have not yet been arranged in the territory of Latvia, the ban model is still on the go. On the situation in Latvia, research is carried out concerning the shortcomings in the planning documents, which does not allow you to fully respect the diversity of the coastal situations, that's why, the coastal development is discouraged that is often associated with recreation, which needs a sustainable development model. You need to make changes in both law and in all levels of planning and development, which is an ongoing process. As the end result, there is expected for each area individually designed sustainable management, taking into account the coastal variability and sensitivity [6, 30, 4, 15]. On the coastal variability in Latvia, it is also important to talk from the angle of the coastal dynamics, understanding that the natural processes are constantly changing the coastline by washing down or, vice versa, increasing the coast. In Latvia, for a longer period there is a coastal monitoring on which classification of the sea coast is based [8, 9].

The landscape identity theme has not yet been extensively studied in Latvia. The Baltic Sea and the Gulf of Riga coastal landscape identity exploration should be based mostly on the coastal peculiar and specific landscape studies as well as on the human perception and the concept of the identity of the landscape interaction. In the European Landscape Convention, the used landscape definition – “Landscape” means an area within the meaning how it is treated by people and when its (landscape) nature is a result of natural and / or human action and interaction [11]. So, the landscape is defined by highlighting not only the natural and human interaction but also the human perception and its importance. The human perception is always associated with subjective indicators as each individual's perception of the landscape is different – it affects the mentality, sex, age, profession, previous experience, social status, place of residence in rural areas, urban, local or non – resident, as well as the emotional mood of the moment, the perception of the landscape. Therefore, in the light of the above factors, we may conclude that the landscape of the visual perception is subjective [34]. Often, landscape definitions differ and depend on the level or levels that clarify the initial impression of the controversial scenes. This means that each

landscape understanding or structural level corresponds to its own definition followed by a different understanding of the identity of the landscape depending on the landscape scale or level. From the foregoing, it can be concluded that the perception of identity of the landscape is closely linked and dependent on the understanding of the landscape itself. The concept of identity in Latvia, is mostly used in relation to the national identity, language and people's identity and it is less related to the landscape. The Baltic Sea coast is one of Latvia's national identity integral components, so this landscape is as a business card at the global level with all the major and minor cities, protected areas and the beach, which are in the ongoing development process. The landscape identity concept is viewed in the author's prior publications [26].

The landscape has holism, which does not allow you to explicitly assert either of landscape research or modeling theories if it does not apply to the multidisciplinary approach. That's why, in the beginning it is important to understand the concept of landscape, the landscape existing links and interactions and then analyze their individual components [3, 23, 24]. As a whole, the landscape is still dualistically visible. Firstly, it shows what people perceive visually. Secondly, it is an ecological system, which has been developing over an extended period of time under natural and human influences. Therefore, the landscape perception and research can be based on the above views. There are differently created landscape research approaches as well. Visually, the aesthetic approach is primarily based on the landscape visible and easily perceivable part of the research and ratings are given in the aesthetic categories. We have to admit that this approach is subject to the subjective element. The approach to the landscape and ecosystem as a natural combination of factors allows the landscape to be characterized by natural elements and factors but the human activity will be considered in addition to the factors. The landscape science uses the functional landscape research. It is based on knowledge that the landscape is a product of human and natural interaction and how the various forms of human activity produce completely different landscapes where it is possible to determine the functional types of the landscape: the countryside or rural landscape, forest landscapes, urban landscapes, transport corridor landscape, industrial landscapes, recreation landscape, the protected area. The landscape functional approach most accurately

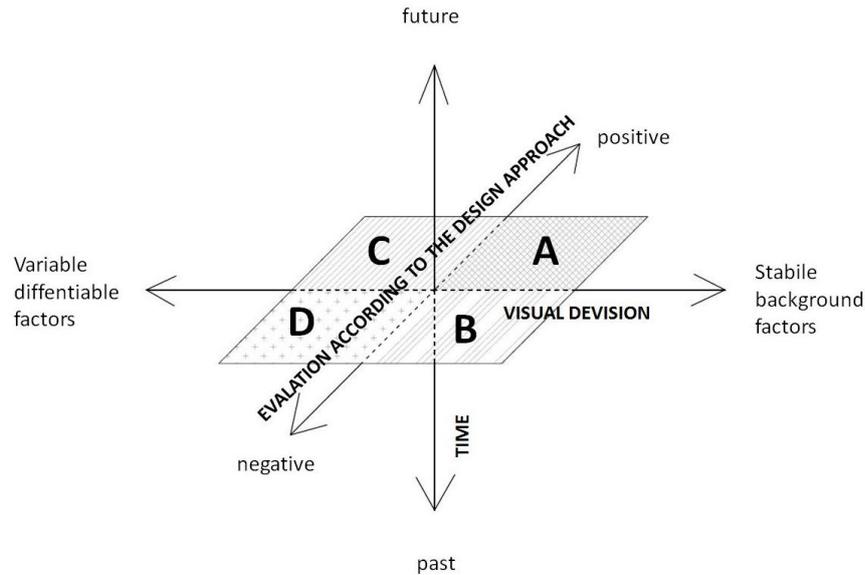


Fig. 1. The role of landscape features  
A – protectable and stressed; B – transformable or visually hidden; C – provide protection and conservation;  
D – transformable or removable [Source: construction by author's]

describes the landscape within the process and many of the elements as well as the landscape spatial structure and it is a material that can be used in developing planning activities [20]. The landscape functional load is an integral part of the landscape of identity as it creates the prerequisites for the both the visual and cognitive perception of the landscape. But with this approach it is not sufficient to determine the identity of the landscape as even one type of the landscape has a different identity. That's why, in the determination of the landscape identity, it is important to study all the three parties of the landscape – the visual landscape (the preserved natural and man – made elements or parts thereof), the historical one (ever been or extinct, destroyed natural and man – made elements) and the cognitive one (human memories and associations, traditions, symbols, experiences, adventure, etc.) [26]. This research focuses on the forming elements of the visual landscape.

In exploring visual forming elements of the landscape, attention should be paid to the visual aesthetic structure where the basic unit is the scene or natural view, which reveals to the watcher from a particular point of view. Analysis of the visual structure lets you see the structure of each element in the aesthetic value and position in the overall structure of the landscape and it is one of the stages of the decision-making on the landscape conservation or change. The landscape visual elements help seeing the landscape signs suggesting of the natural processes and human activities, more ancient traditions of land use [21]. The landscape visual value can be determined by the following indicators: visual accessibility, scale, naturalness, the way of use,

diversity and compliance [28]. The visual value is emphasized in the inventory of the landscape, which means that the key indicators of the quality of the landscape are as follows – the landscape relationship, diversity and aura; visibility and accessibility [25]. This measurement can be displayed in a scheme if one of the axes is a visual scale, the second one – the compositional scale but the third axis is the timeline as the landscape variability is expressed in the time dimension (Fig. 1). The visual scale is necessary for the determination of elements of the landscape – defining them as stable or changing discriminatory elements. Here you can talk about such elements of the landscape as buildings, separate architectural elements, roads, land surface and hydrology, land cover and relief, etc. The compositional scale is subjective and allows to assess the landscape aesthetics as positive, neutral, or negative, which is based on the architecture and spatial planning, architecturally applied spatial composition techniques in evaluating the landscape aesthetic quality [18, 28, 33, 34]. You should take into consideration the visual availability, scale, color, texture, materials, diversity, rarity, naturalness, movements and sensations.

The visual landscape evaluation and nomination of its criteria are covered in many parts of the geography, architecture, landscape architecture and environmental studies. Most viewed here is the following group of the criteria – the diversity of visual accessibility, land use, naturalness and coordination or harmony [27].

The landscape visual accessibility should be evaluated as the very first one – if the landscape is not visible, it is not possible to think of further indicators.

TABLE 1

Landscape perception scales (levels) and Landscape Identity elements [Source: construction by author's]

Landscape perception scale	Landscape elements and elements groups									
	Continent scale	Europe scale	Baltic sea region scale	Baltic sea and Riga's goal sea coast in Latvia	Seacoast segments	Landscape type	Landscape area or district	Individual place	Landscape space	View
Location on Earth's	+	-	-	-	-	-	-	-	-	-
Distance until equator	+	+	-	-	-	-	-	-	-	-
Climate zone	+	+	+	+	-	-	-	-	-	-
Geomorphologic structure	-	+	+	+	-	-	-	-	-	-
Ocean closeness	-	+	+	+	-	-	-	-	-	-
Seacoast line distance	-	+	+	+	+	-	-	-	-	-
Coast profile	-	-	+	+	+	+	+	+	-	-
Relief structure and forms	-	-	-	+	+	+	+	+	+	+
Greenery intensity	-	-	-	+	+	+	+	+	+	+
Greenery type	-	-	-	-	+	+	+	+	+	+
Biotopes	-	-	-	-	-	+	+	+	+	+
Area function	-	-	-	-	-	+	+	+	+	+
Tradition and heritage	-	-	-	-	-	-	+	+	+	+
Spatial structure	-	-	-	-	-	-	+	+	+	+
Building	-	-	-	-	-	-	+	+	+	+
Men, how individual	-	-	-	-	-	-	-	+	+	+
Microclimate	-	-	-	-	-	-	-	-	+	+
Light and dark interaction	-	-	-	-	-	-	-	-	+	+
Color, form and texture	-	-	-	-	-	-	-	-	+	+
Secondary objects	-	-	-	-	-	-	-	-	-	+

With the increase of visibility, the visual accessibility is increased. So you can distinguish three types of visual accessibility – inaccessibility, partially accessibility and fully accessible landscape. The elements describing the visual accessibility are the view, the view line length and width of the view. No less important there are the relief shapes that have a direct impact on the view and visibility [28, 25, 12]. In the visual estimation of the landscape, there is important the scale as well. Here you should separately take the landscape scale and perception scale. Each landscape perception scale is featured by a landscape element group, which influences the structure of the landscape itself, perception and development. In each of the perceptual scale, there are own patterns, their ways of manifestation of regularities, own capabilities to study them and use the research results. On it there is based the most important scientific research and design work rule: one level regularity cannot automatically be transferred to another level [19, 17]. In the case of a change in the perceptions scale, changes the number of the seen details and elements that feature the landscape identity [13]. In the theoretical study, the perceptual scale can be divided into three groups–near, medium and large [19]. Carrying out the practical research, surveying the landscape, it is possible to divide it

into a number of groups–the continental scale, the European scale, the Baltic Sea region, the Baltic Sea and the Gulf of Riga coast, coastal parts, landscape types, locality or region, a separate place, the landscape space, a separate view. Within the continental scale, an important role is played by the climate and location against the northern pole, the equator, etc. Within the European scale as the main landscape designer elements are the regional geo–morphological peculiarities, proximity to the sea area, the climatic zone, etc. In the Baltic Sea region– the coastal zone length, the coastal geo–morphological structure, forestation, the major port cities. Within the perceptual level of Latvia–ancient cultures, traditions, settlements, the shoreline nature, landscape types. Within the landscape typological level, the shaping factors are relief, cover, the type of land use, building and the adjacent areas functional load, etc. The locality and region are characterized by specific people and their work, traditions, natural and human resources, certain natural elements. The identity of individual places consists of both natural and man–made elements – from constructions and small shapes of architecture and installations. For a single view, as the key factor can also be a separate object's color, shape, texture, shading patterns or the sun factors, compositional regularities, etc. (Table 1).

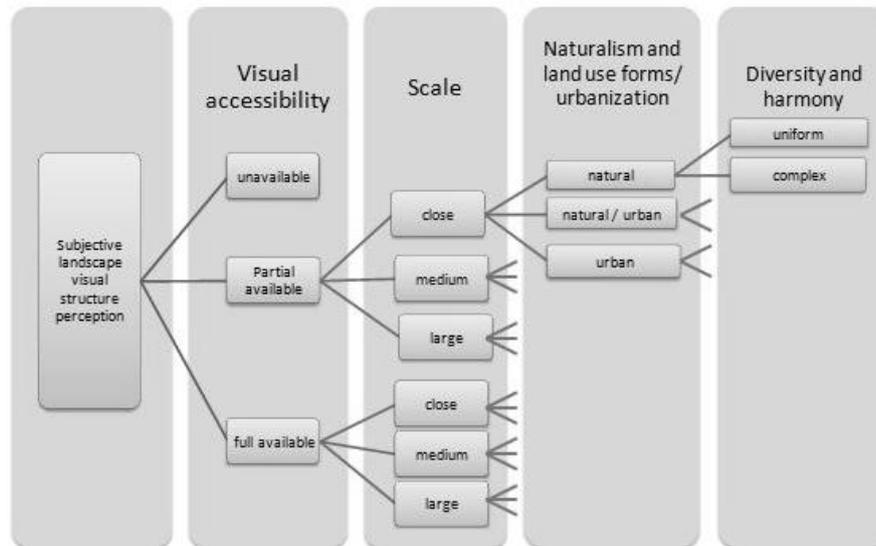


Fig. 2. Subjective landscape visual structure perception [Source: construction by author's]

The number of the landscape elements that influence the identity of the landscape strongly depends on the scale (level) of the landscape perception – the closer the scale, the larger group of elements in a landscape feature the landscape identity. These elements are often defined as place symbols and together with other factors make up the unique and recognizable aura of each landscape space [5, 32]. As the landscape describing feature, the people perceive naturalness of the landscape and the land use types. Three subgroups can be distinguished there – almost untouched landscape, partly used landscape and intensively used landscape. The specificity of the land use is closely associated with the shapes of the relief, so here it is worth noting the local – level landscape types – flat open farmland, flat woodland, flat insular farmland, undulating open farmland, undulating woodland, undulating insular farmland, hilly woodland, hilly mosaic – type landscape as well as the unique landscapes – the lake district, terraced river valley landscapes, river landscapes, wetland landscapes, moorland landscapes [25, 22]. Naturalness of the landscape and the way of uses is closely associated with the landscape's diversity and accordance, it is exposed to the subjective factor. The landscape diversity is often emphasized as the visual quality

indicator [16]. Most people perceive diversity of elements in the landscape but often the landscape in its origin is fairly uniform, so it's important to follow the structure diversity and biological diversity. For assessment of the maximum accordance, there are used the landscape architectural – compositional approaches [28, 35]. As accordant landscapes may be named such ones where there is harmony between the nature – and man – made landscape elements [25].

Combining the visual perception criteria and placing it in the order of perception, there is created the visual structure table where the landscape is divided into 37 visual structure types (Fig. 2). The division of the landscape visual types is more theoretical and can serve as a base for the landscape visual assessment, marking the main groups of landscapes and the factors that influence the visual perception. Based on this model of the theoretical types, there is developed the landscape visual monitoring matrix that served for the data collection, surveying the area of the research.

This work aims to study the Baltic Sea and the Gulf of Riga coastal landscape visual shaping elements, classify the landscape by its shaping visual perception indicators, define specific to the coastal part visual types and define the mutual interactions of the landscape elements.

**Materials and methods**

Object: the selected part Ainazi – Salaca is 14 km long and 11.3 km<sup>2</sup> large. It is located in the north – eastern part of the Gulf of Riga of the Baltic Sea, in the north – eastern part of Vidzeme (Fig. 3). All the area is part of the Northern Vidzeme biosphere reserve landscape protection zone, which is the only of such kind of specially protected natural area in Latvia. In the reserve, there will be

included the natural reserve Randu meadows, which is created for the seaside meadow, rare plant species and society protection [7]. The area is characterized by coexistence of almost untouched natural areas with the urban environment, which creates a specific, harmonious, identifiable landscape. In the selected area there are located such rivers as the River Salaca, the Krisupite,

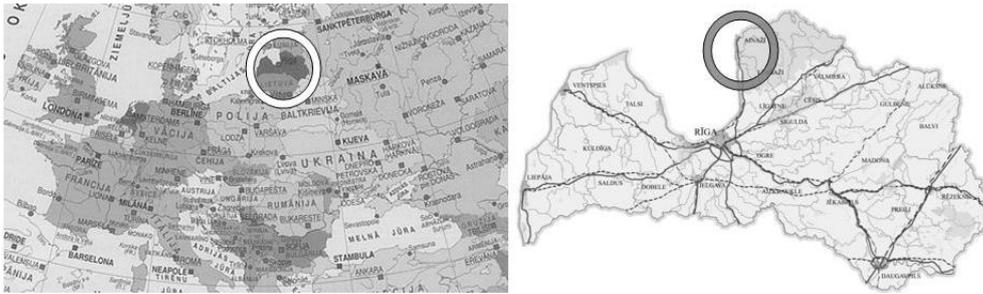


Fig. 3. Research object location in Europe and Latvia  
[Source: construction by author's used google maps]

the Indupe, the Veverupite, the Rozupite and the Blusupite. The Salaca River and its valley are listed as one of the 150 European benchmark rivers, where there have been preserved particular high – quality and diverse biological resources.

The entire part Ainazi – Salaca falls within the administrative area of Salacgriva. In this part fall: Ainazi city, Kuivizi village and part of the Salacgriva city on the right bank. Ainazi city was an ancient village of the Liv fishermen, near the Estonian border. Kuivizi is a fishermen's village that was formed at the place where the Krisupite flows into the Gulf of Riga. Salacgriva city is the Centre of the municipality of Salacgriva, it was formed in the mouth of the Salaca River [1, 31].

The research of the landscape visual shaping elements is one of the stages of landscape identity recognition techniques. In the landscape study, for the visual landscape overall image evaluation there are used the following criteria: the visual accessibility, scale, relief, color, materials, texture, diversity, rarity, sensations, movement and naturalness. There are separately evaluated the landscape element groups – buildings, separate architectural elements, roads, land surface, ground cover, hydrology.

## Results

The visual shaping elements of the landscape identity, using the landscape identity recognition method [26], are set for the area from Ainazi to Salacgriva, there is both the urban and rural environment. As a result of the research there are determined the landscape typical features and elements as well as unique landscape features and elements.

In the field survey, the visual study was based on the landscape description using visual perceptual criteria. For the data collection, there is used the visual landscape survey matrix and the data are collected and processed on the basis of the matrix included valuation factors: the description of the overall landscape image and the description of the landscape elements. The description of the overall landscape image is partly a subjective assessment as it is based on associative perception criteria.

Recognition of the visual shaping elements of the landscape includes the following stages – the field – research, data processing and analysis of the results. The recognition method of the visual shaping elements of the landscape identity is described in the previous publications of the author [26].

Pooling the required data for the recognition of the visual shaping elements of the landscape is carried out in January and February 2011, by analyzing separate landscape spaces using previously prepared assessment matrices. There were selected 50 typical and unique landscape spaces throughout the whole study area. In each of these landscape spaces there was found a perspective, the number was given to it, there were found GPS coordinates using the navigator Becker Traffic Assist 7926, there were completed the visual perception matrices, the photo fixation – panorama was presented. On the data obtained in the field survey, there is presented the landscape space – view point map where by entering the coordinates (Fig. 4), the matrix data are collected and processed in the SPSS environment.

As the final result, based on the SPSS data, there are defined the landscape visual type and their main shaping elements.

The area under the research is stretching along the Baltic coast in the length of 13 km and in width is less than 2 km, so it is perceived as a linear landscape space. For presenting the overall landscape, there has been created the landscape visual spatial curve (Fig. 4). The landscape visual spatial curve diagram displays the area character under the research where there can be clearly distinguished two phases of the landscape space of the urban environment – the landscape space of Ainazi town and Salacgriva town. Between the parts of the urban environment, there is the countryside environment which includes a small populated place – Kuivizi, individual residential houses but mostly it is a forest area with some agricultural land parcels. Moving down the highway, this landscape space is perceived as a narrow corridor. As a result of the visual landscape evaluation, there are determined visually different landscape spaces.



Fig. 4. The landscape visual spatial curve. Visual accessibility:

1 – a narrow, 2 – limited, 3 – partly accessible, 4 – open, 5 – fully accessible; scale: 1 – intimate, 2 – close, 3 – small, 4 – medium, 5 – large, 6 – wide; terrain: 1 – gully, 2 – smooth, 3 – flat with some hills, 4 – gently wavy, 5 – hilly, 6 – dunes, 7 – slope; color: 1 – neutral, 2 – monochrome, 3 – nuanced, 4 – vivid, 5 – with some bright elements; texture: 1 – smooth, 2 – soft, 3 – fine, 4 – rough, 5 – sharp, 6 – fragmented; diversity: 1 – uniform, 2 – simple, 3 – various, 4 – complex; rarity: 1 – common, 2 – typical, 3 – unique, 4 – rare, 5 – unique; naturalism: 1 – natural, 2 – natural with some man-made elements, 3 – anthropogenic environment with some natural elements, 4 – an urban [Source: construction by author's]

One of them is a small town with the characteristic cultural and historical buildings, small scale and with limited views, some color accents, a large diversity of the used landscape elements and materials, it is an urban and typical landscape. Next is a forested area between the two cities and with the narrow corridor – here there is mostly a monochrome and visually uniform landscape, it is partially natural and usual landscape. Separately distinguishable there is the sea coast, the most part of which occupy the protected coastal meadows, here there are open and a wide views, it is a natural and unique area.

For the description of the whole area, there are used the following criteria: the visual accessibility, scale, relief, color, material, texture, diversity, rarity, sensations, movement and naturalness.

Visual accessibility is mostly narrow 24 % and restricted 46 % (Fig. 5). The restriction of these views consists of forest massifs, tree stands and buildings. The scale is assessed as an average – 40 % and small – 26 % (Fig. 6). Wide and large scales are prevailing on the sea coast or in rarely met agricultural areas. The average scale is most specific to the urban environment. The relief can be characterized as flat – 68 % or slightly undulated 12 %. In general, the whole survey area can be described as flat but the slight undulated relief is made up of dunes and river banks. The landscape survey took place during the winter period and the landscape color grading varies between the neutral – 30 % and monochrome – 28 % (Fig. 7). In general, both in the urban and particularly in the rural environment there are almost no individual vivid and contrasted objects. The color display can be seen along with the characteristic material diversity in the landscape. The most commonly encountered materials are wood, stone, plaster, and brick. Despite proximity of both towns, a specific material group is peculiar to each of these towns. The identity of Ainazi is created from stone and wooden heritage buildings. For Salacgriva, more common are plaster and brick buildings. The landscape texture is rough – 72 % and patchy – 12 % (Fig. 8).

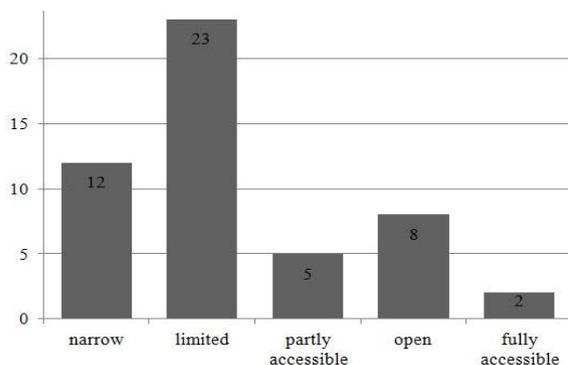


Fig. 5. Visual accessibility (number of items)

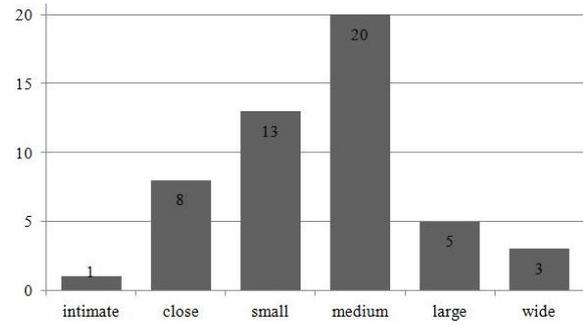


Fig. 6. Scale incidence (number of items)

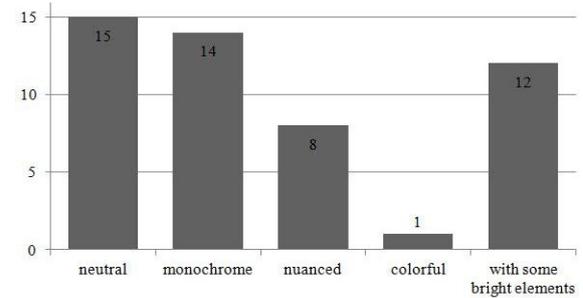


Fig. 7. Color incidence (number of items)

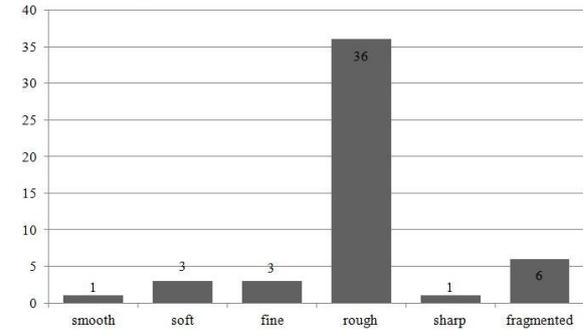


Fig. 8. Texture incidence (number of items)

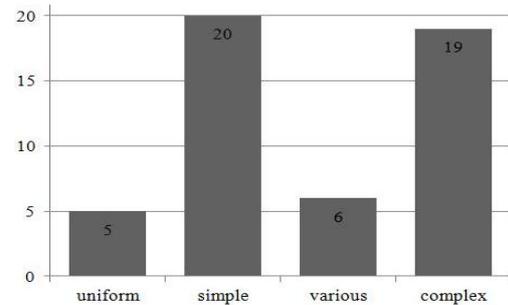


Fig. 9. Diversity incidence (number of items)

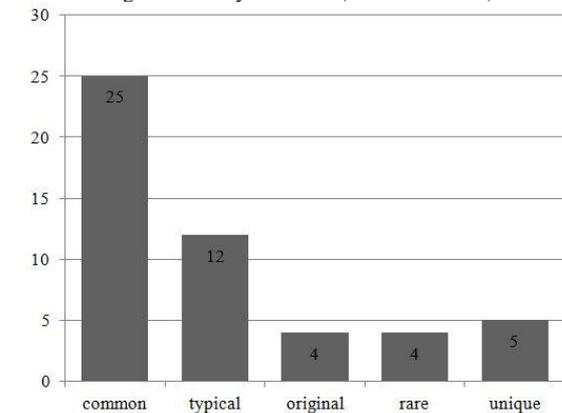


Fig. 10. Rarity incidence (number of items)

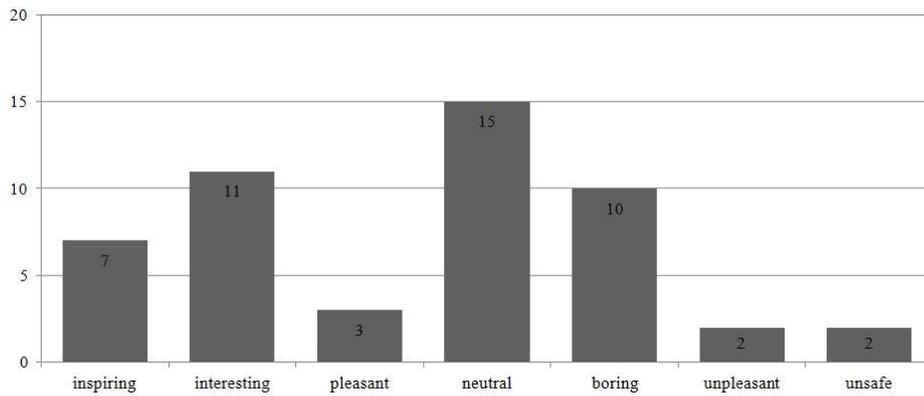


Fig. 11. Sensation incidence (number of items)

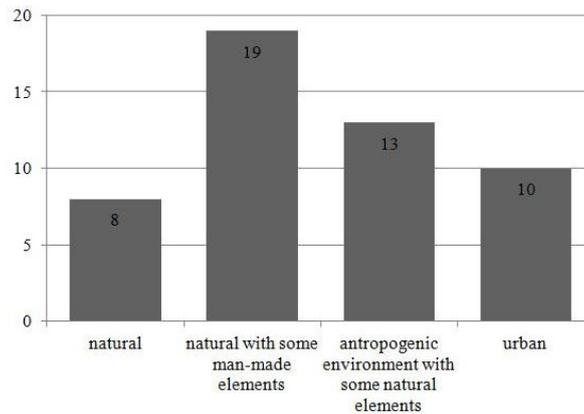


Fig. 12. Naturalism incidence (number of items)

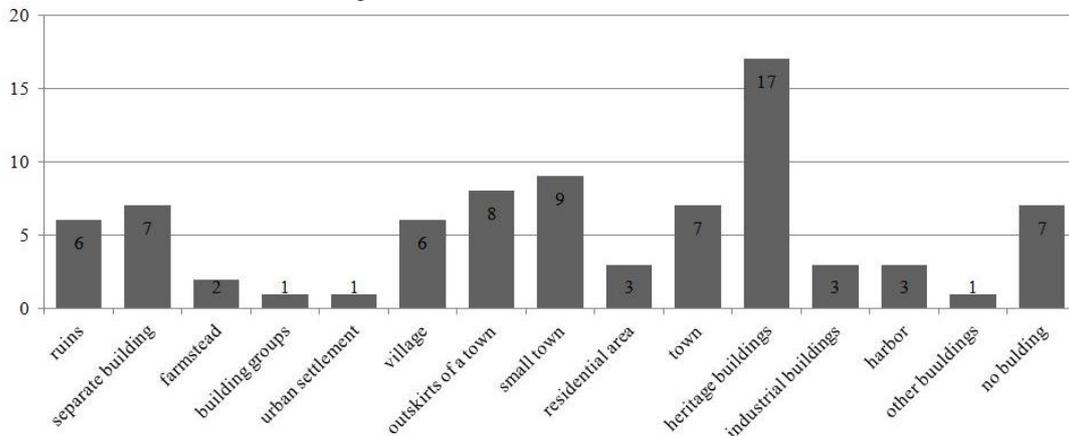


Fig. 13. Buildings incidence (number of items)

The texture formative elements are the forest and plantations, buildings, individual architectural elements and nature objects. The diversity of the research area is simple – 40 % and complex – 38 % (Fig. 9). The diversity is viewed in conjunction with rare landscapes evaluation, average – 50 % and typical – 24 % (Fig. 10). The landscape rarity and diversity effect is met in the landscape diversity and uniqueness. Sensation assessment is subjective and, therefore, depends on many factors. The overall image of the landscape from the resulting data can be described as interesting – 22 %, neutral – 30 % and boring – 20% (Fig. 11). The movement is dead – 44 %, calm – 24 % and lively – 32 %. Most of the area is the countryside landscape, which is described as calm but lively movement can be

observed in the urban environment. The naturalness of the landscape depends on the man – made elements and the weight of each definite space of the environment. As natural with some elements made by people, the landscape is described in 38 % of cases but as an antropogenous environment with separate natural elements – in 26 % cases (Fig. 12). In the visual survey matrix of the landscape, elements of the landscape are divided into six groups, for each group defining subparagraphs – the most common landscape elements. As the landscape survey has been carried out during the winter, it was impossible to evaluate the road and ground surface, therefore, the landscape elements are assessed in four categories: buildings, individual architectural elements, the land cover and greenery, water elements.

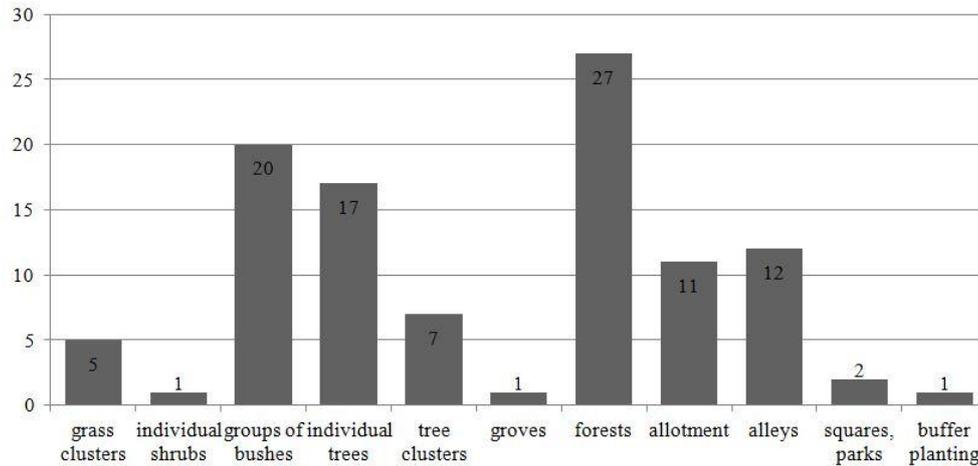


Fig. 14. Greenery incidence (number of items)

In the building element group, the most common are cultural and historical, small town and suburban buildings. Ainazi town and Salacgriva town are typical small towns with a small suburban residential area with private houses and individual service objects – fuel stations, rest areas and camps, small production facilities (Fig. 13). The most typical architectural elements are the poles and fences – they occur in both urban and rural environments. The land surface describing elements are evenly distributed – in the urban area they are alleys, kitchen gardens and individual trees but in the rural environment – forests, shrub groups and

individual trees (Fig. 14). Despite the proximity of the sea, in the visual rating of hydrology, most often there is not any water object, less visible is the river and the sea.

Assessing the overall landscape and individual landscape elements there are formed a number of relationships where the individual landscape elements make impact on some of the overall landscape elements or a group of criteria. The individual elements of the landscape and landscape structures interaction results in the landscape visual identity associated with cognitive landscape identity.

### Discussion

The evaluation of the visual shaping elements of the landscape is an important part of the landscape identity determination. As it is evidenced by the results obtained, the visual image of the landscape is changing in each individual visual landscape space and depends on many criteria defining it. The landscape visual and spatial curve displays how the criteria vary depending on the landscape of urban or rural environment. Here you can see a number of landscape visual types. The first type is a natural large-scale coast with wide views, simplified visual diversity but unique and it creates pleasant sensations – such as the protected Randu meadow area. The second type is a forested area with the narrow transport corridor, a very small visual accessibility, monochrome, uniform and even boring. The third type is a small town with mid- and small-scale landscape spaces, separate color accents, beautiful cultural and historical buildings, neutral and interesting sensations. It should be noted that the visual study results show how the sea proximity basically influence the first visual evaluation type – the coast itself, since 70 % of cases do not appear in either the sea or the river proximity. This phenomenon can be explained by the protected areas forest zone, which separates the man's

everyday environment from the sea. The sea presence is reminded by the individual elements of the landscape and buildings – the lighthouse, the old warehouses in Ainazi, the individual cultural and historical objects – monuments, signs, used in the decoration, architectural motifs and elements and names of other objects.

Defining the visual shaping elements of the landscape identity, there is found relationship between several evaluation criteria. For example, evaluating the visual accessibility despite of the fact that the coast has wide views to the sea and coastal meadows, the forest zone that is located between the sea and towns of the highway restrict the views, creating small- and medium-scale landscapes. Here you can see the relationship between the visual accessibility and scale – the more limited the visual accessibility, the less is landscape scale. Described by Fisher and Nikodemus relationship between the visual accessibility and relief was proved as the sea nearby dunes fully or partially restrict the view [25, 12]. Relationship is created between color, texture and the used materials. For example, a rough structure can fully change or even hide the color peculiarities. The common materials create a different color

palette for the landscape space but in the area under the research it highlights common trends that are specific to the visual landscape types. Differences in the color—they are the palettes in Ainazi and Salacgriva. In Ainazi, the color palette and texture are affected by the stone and wood ratio but in Salacgriva – by the plaster and brick ratio in the finishes of buildings. The texture has also a close connection with the scale—the closer the scale, the finer is the texture, for example, the wood massifs of a large-scale landscape create a rough texture but individual trees in a small scale or even intimate-scale landscape create a fine texture. This relationship is also shown in the introductory part of article in Table 1.

The landscape visual diversity is associated with the landscape elements or color and texture quantity and diversity in each specific landscape space. It should be noted that the visual diversity of the landscape and rarity in the landscape positive direction study's results even prove the opposite claim – the fewer landscape elements and simpler the landscape, hence, it is often more natural if it is more unique, as, for an example, the Randu meadows. In the visual landscape evaluation it is important not to confuse the visual diversity and biodiversity as evidenced by the Randu meadow example – in a visually dull winter season but in a biologically diverse and unique landscape space. It should be recalled that the diversity of the landscape is often mentioned as the visual quality indicator [16]. However, there is no direct relationship created as speaking about the urban environment, unfortunately, it should be recognized that a too large number of elements, which increases the landscape diversity, reduces their aesthetically pleasing visual quality as inconsistencies between elements create chaos and stuffing with colors and textures as well as the materials used. This is the case in the centre of Salacgriva town where a small-scale historical and cultural fragile building is adjacent to a large scale building, offices – petrol stations, shopping centres and industrial buildings.

The criterion included in the landscape evaluation in the sensations is more vulnerable to the subjective factor but, on overall, it is the final evaluation criterion as it depends on all of the above criteria and their mutual interactions that makes up the overall landscape and causes definite sensations. This criterion is also affected by the weather conditions, the landscape elements and their groups, even the smells and sounds, so it must be concluded that the sensation criterion due to its too big variability does not give an unbiased result and it cannot be used in further studies. Therefore, this criterion should be considered separately as a phenomenon but it is not possible to analyze or compare it.

The landscape movement is linked with human activities – and in the urban environment it is pronouncedly lively not even raging but in the rural environment it is quiet and dead. In general, even in many parts of Ainazi and Salacgriva, the landscape movement is assessed to be quiet as a small town life is peaceful and leisurely. The natural landscape depends on the concentration of the economic activity as well, leaving the natural landscape of the coast and creating the anthropogenic environments only in city centres as in Ainazi and Salacgriva the landscape urbanization degree is not great, with the exception of the port area of Salacgriva where the industrial and public service objects have not left space for a natural environment, even the Salaca River banks are transformed. In general, the urban landscapes make up 20 % of the area marked landscape spaces but it is just a landscape space number which spatially is concentrated in the town and set up in the compact, without taking up a large room. We have to admit that for a true assessment of the naturalness of the area, in the future research, there will be necessary to calculate the area occupied by urban areas.

The evaluation of the landscape elements, selecting the most common object existence for each landscape space, the most common is the cultural and historical building, fences and poles, forest massifs and shrub groups but the water elements are not visible, despite the proximity of the sea and many rivers in the area being studied. In general, elements of the landscape leave an impact on many criteria of the overall image creation – the vision which is reduced with the appearance of the forest, trees or shrubs or dense buildings. The landscape elements influence the visual diversity of the landscape as well – it increases with increasing the number of elements as well as with the color palette and the diversity of the used materials and textures.

It should be noted that the seasons can significantly alter the visual rating and it has to do with the plant seasonal changes. These seasonal changes directly and indirectly influence many of the evaluation criteria. With the seasonal changes, also changes the visual accessibility – in the summer time grows the foliage volume, decreasing the visual accessibility, it indirectly leaves impact on the landscape scale.

The landscape color palette and texture are directly dependent on the seasonal changes – in the winter period of study, in 58 % of the cases the landscape is neutral and monochrome as there are not visible the coastal meadow flowering plants that form a unique habitat and have a material impact on the overall image of the landscape. For further research there is necessary to also estimate other seasons to see the ground vegetation cover and roads as well as the diversity of the color palette and texture.

The landscape holism explains the improbability of a single judge, evaluate and define the components of the landscape, without taking into account other aspects and not understanding the nature of the landscape and its notion [3, 23, 24]. The landscape visual evaluation in the Baltic Sea and the Gulf of Riga coastal landscape

identity study makes only one of the study parts and is not regarded as the final result. The visual landscape evaluation results are an intermediate in defining the identity of the coastal landscape as important there are both historical and landscape studies, cognitive awareness of identity in order to more precisely, objectively evaluate the landscape identity.

## Conclusions

As a result of the visual evaluation of the landscape, using the overall image and individual landscape element evaluation matrix, the landscape space is divided into three types that are specific to the territory examined. The first type is a natural large-scale coast with wide views, simple visual diversity but unique and creates comfortable sensations. The second type is a forested area with a narrow transport corridor, restricted visual accessibility, monochrome, uniform and even boring. The third type is a small town with mid- and small-scale landscape spaces, separate color accents, beautiful cultural and historical buildings, neutral and interesting sensations.

There have been found relationship between many landscape elements: the visual accessibility and scale; the scale and the relief; the scale and texture; color,

texture and use of materials; the diversity, color, texture and common elements. With all of the criteria there are related sensations, but scored separately, not compared to other criteria as here the most gets the landscapes holism.

In future research, it is intended to study other Baltic Sea and the Gulf of Riga coastal landscapes to be able to mark out several visual types of the landscape characteristic to the Latvian coast and compare the results. It is also intended to carry out a visual survey of different seasons in order to more objectively evaluate the landscape elements under the impact of weather conditions.

The landscape visual survey results are included in the research of the landscape identity for the part from Ainazi to the Salaca River.

## Acknowledgements

The work had developed within the framework of European Social Fund support for doctoral (No. 2009/0180/1DP/1.1.2.1.2/09/IPIA/VIAA/017) and master studies (No.2009/0165/1DP/1.1.2.1.1/09/IPIA/VIAA/008) program of Latvia University of Agriculture.

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**Kopsavilkums.** Globalizācijas ietekme liek aizdomāties par Latvijas ainavas identitāti, it īpaši par piekrastes ainavas straujajām izmaiņām, kas saistītas gan ar dabas procesiem, gan ar cilvēka darbību. Ainavas identitātes atpazīšana ir cieši saistīta ar tās veidotājelementu identificēšanu, apsekošanu un aprakstīšanu, jo ainavas elementi ir identitātes uztveres atslēga, un tiem ir viena no noteicošajām lomām ainavas identitātes veidošanā. Ainavas identitātes galvenie veidotājelementi ir: vizuālie, vēsturiskie un kognitīvie. Paša ainavas identitātes atpazīšanas metode balstās uz secīgo katras grupas ainavas veidotājelementu izpēti un noteikšanu, apvienojot zem katra posma ainavas izpētes jomā kartogrāfiskas un aprakstošas metodes un pieejas. Šis pētījums ir daļa no kopējas identitātes noteikšanas un tas ir veltīts ainavas vizuālo veidotājelementu definēšanai. Šī darbā mērķis ir pētīt Baltijas jūras un Rīgas jūras līča piekrastes ainavas identitātes vizuālus veidotājelementus, klasificēt ainavu pēc to veidojošiem vizuālās uztveres rādītājiem, izvirzot priekšplānā piekrastei raksturīgās iezīmes. Pētījums veikts laikā posmā no 2010. gada oktobra līdz 2011. gada martam. Izvēlētais posms Ainaži – Salaca ir 14 km garš un 11.3 km<sup>2</sup> liels. Tas atrodas Baltijas jūras Rīgas līča ziemeļaustrumu daļā, Vidzemes ziemeļrietumos. Baltijas jūras un Rīgas jūras līča piekrastes ainavas identitātes vizuālo veidotājelementu izpēte posmā no Ainažiem līdz Salacas upei balstāma uz ainavas vizuālo apsekošanu, izmantojot apsekošanas matricas. Apsekošanas matrica sastāv no divām daļām – ainavas koptēla raksturošana un tipisko ainavas elementu uzskaitē. Izvēlētas 50 raksturīgas un unikālas ainaviskās telpas visā pētāmā teritorijā. Rezultātā, pamatojoties uz SPSS datiem formulē ainavas raksturīgo vizuālo tipu, to savstarpējo mijiedarbību, kas ir viena no ainavas identitātes veidojošām daļām.