02

ASSESSMENT OF THE EXISTING STATE
2.1 Natural and cultural heritage

Diversity of geologic base, landscape, climate and land, as well as geographic position of Montenegro in the Balkan peninsula provided for development of high-value biological diversity. This categorises Montenegro into biological “hot-spot” locations of importance both in Europe and worldwide. The coastal zone of Montenegro is also characterised by a high degree of diversity and specific habitats and species.

Due to favourable geomorphologic and geographical characteristics, human presence at the Montenegrin coast dates back to younger stone age. Millennia-long presence of human communities, coupled with specificities of the natural position and influences of different cultures have been turned into a rich cultural heritage of the Montenegrin coastal zone.

2.1.1 Biodiversity and specific ecosystems

Typical coastal and seaside habitats are found on the rocky coast (cliffs), numerous natural sand beaches, as well as on (eight) small isles. On the southern slopes of coastal mountains, typical Mediterranean vegetation of macchia and garrigue has developed, and on lower terrains and the coast itself – halophyte vegetation, as well as cultivated terrains with olive and fruit groves. Coastal mountains Orjen, Lovćen and Rumija (with the surrounding hills and mountainous areas) are considered diversity centres of vascular flora. Coastal zone sites where greatest number of habitats of international importance occurs (including marshy habitats) are: Ulcinj region including its hinterland, in particular Velika beach and Ada Bojana; Buljarica; and certain still preserved parts of the Boka Kotorska Bay. Confluences of rivers (Bojana, Sutorina and other small water flows) also make a part of coastal habitats important for biodiversity preservation. On the sand dunes of Velika beach, unique halophytic vegetation is found. Tivat Salinas and Ulcinj salt works are localities of great importance with halophytic vegetation on muddy-clay grounds. This type of vegetation has almost disappeared from the eastern coast of the Adriatic, and in Montenegro it can only be found on said localities. Specific fauna, particularly rich birdlife, is also typical for this vegetation.

In addition to algae flora, seaweed meadows of Posidonia oceanica and Cymodocea nodosa can be found in the marine ecosystem. A substantial number of animal species is linked to their life cycle. The Adriatic Sea fauna has still not been completely explored, however recent data has shown that more than 40 species of sponge, 150 cnidarian species, 940 molluscs, over 400 fish species, three sea turtle species, and four dolphin species live in the Montenegrin part of the Adriatic.

In the land part of the coastal zone there are locations with vulnerable biodiversity which should be protected from negative impacts, particularly by preserving their completeness, and these are: Orjen, Boka Kotorska Bay, Vrmac, Buljarica, Rumija, Šasko jezero, Velelika beach, as well as parts of natural preserved coast. Based on a detailed mapping of terrestrial habitats, by applying multi-criteria approach, the habitats on Velika beach, Tivat Salinas, Buljarica and Platanums have been assessed as particularly valuable. Zones of high vulnerability are shown on map 2-1. In the marine part of the coastal zone, habitats of Posidonia oceanica, as well as underwater caves have been assessed as vulnerable. Zones of vulnerable or valuable biodiversity to a significant extent coincide with the network of the exist-
The existing protected natural assets include parts of the national parks Skadar Lake and Lovćen, special nature reserve (Tivat Salinas), several monuments of nature (including around 20 beaches and other sites), several landscapes with special natural characteristics, as well as the area of Kotor-Risan Bay with the town of Kotor (which is protected under a municipal regulation and is on the UNESCO list of natural and cultural heritage). Due to their importance for coastal zone biodiversity, several individual dendrologic objects have also been protected.° In a situation where boundaries of the existing protected natural assets are not defined precisely and where the zones of potential protected natural assets (which have been recognised as valuable in the valid spatial planning documentation) have been approximately defined, the available data has been analysed by using GIS.°

° In accordance with the provisions of the Law on nature protection.

° Under the Decision on protection of natural objects (Official Gazette of Montenegro no. 76/06) several species of oak trees located at different sites have been protected, as well as the old olive tree on Mirovica in Bar.

° Within the Assessment of general vulnerability of the coastal zones of MNE, CAMP MNE (2012) and the Vulnerability assessment of the narrow coastal zone, CAMP MNE (2013).
SP MNE and SPSP for the public maritime domain, as well as sites identified through implemented research projects. The overall surface of these areas amounts to 9,000 ha (including marine areas and corresponding coastal belts). The zones of the existing and planned protected natural assets are shown on map 2-2.

The existing system of protected natural assets management has shown numerous deficiencies and does not provide for preservation of completeness and integrity of coastal ecosystems (on land and at sea). Results of the analysis of drivers, pressures, state and impacts, and of the key problems and weaknesses are described in chapter 3, section 3.1. Regarding the existing state, the following assessments can be singled out due to their importance:

− Managers of protected natural assets in the coastal zone have not been established in the period 1968 – 2014, nor were measures of active care taking implemented. The national parks represent an exception, and the same applies to Tivat Salinas since 2014 when its manager has been designated. Amendments to the Law on nature protection from 2013 place responsibility for management of other protected natural assets in the public maritime domain zone on the Public Enterprise for Public Maritime Domain Management.

− Protection measures for valuable ecosystems outside nature protected areas are rarely planned and implemented, which results in frequent examples of degradation of specific coastal habitats and species. Sand dunes on Velika beach with remaining fragments of the Skadar oak Quercus robur scarus forests in its hinterland have been recognised as the most endangered coastal habitats. Bird fauna linked to these habitats is endangered due to hunting.

− Even though accurate data is missing, it is obvious that an important part of the existing protected natural assets has lost a part or all of the characteristics due to which they were placed under protection in the first place. Such examples include parts of Becići and Slovenska beaches, hills Spač, beach Pržno and other locations.

− Identification and establishment of the national Ecologic Network12 has not been finalised. The network should include all the areas with specific coastal habitats whose protection is mandatory in line with the ICZM Protocol requirements. The list of Emerald sites was defined in 2008 and verified by the Standing Committee of the Bern Convention in 2012, and it encompasses 13 areas in the coastal zone13.

− Development and spatial plans envisage a number of interventions the implementation of which could endanger natural values of particular sites, whereas stability and resilience of important coastal ecosystems would become uncertain. The Assessment of general vulnerability of the coastal zone identified geographic areas14 in which, due to high value of biodiversity, conflicts in the existing use of space should be eliminated or mitigated (through land-use optimisation).
Map 2-2: The existing and planned protected natural assets

SOURCE: CAMP
2.1.2 Cultural heritage

Cultural heritage of the Montenegrin coast is characterised by a high degree of diversity considering both style and chronological characteristics and cultural and historic values, and its basic functions.

According to data of the Administration for the Protection of Cultural Heritage, within the area of coastal municipalities there are in total 735 immovable cultural assets; distribution by municipalities is the following: Ulcinj 15, Bar 57, Budva 51, Tivat 26, Kotor 49, and Herceg Novi 127. For another 290 assets it has been determined they possess potential cultural values, and these are distributed by municipalities as follows: Ulcinj 27, Bar 62, Budva 23, Tivat 41, and Herceg Novi 71. As for submerged archaeological sites, 28 cultural assets have been registered.

Figure 2-3: Cultural heritage (old towns, fortifications, sacral objects)
Source: Special purpose spatial plan for the coastal zone of Montenegro (SPSPCZ MNE, Planplus d.o.o., December 2013)
prehensive strategy of Montenegrin cultural heritage protection is still missing. Management plan for natural and cultural-historic area of Kotor was adopted in 2011. This document, as well as decisions of the UNESCO World Heritage Committee and other relevant reports identified problems and recommendations of importance for protection of natural, cultural and historic Kotor area as UNESCO world heritage. A special Law on protection of natural, cultural and historic area of Kotor has also been adopted.

Irrespective of the fact that its protection has been regulated by legal norms, submerged cultural heritage has not been protected in a physical sense. This part of cultural heritage is not adequately mapped even though it has been identified and its specific locations have been registered in individual studies.

The value of cultural assets has been gravely diminished by years-long neglect of the cultural heritage in development plans, low priority of maintenance, conservation and remediation measures, at times uncontrolled construction and lack of compliance with regulations. Beside urban units, rural and old settlements located along the coast have been affected by negative impacts of construction. Problems are particularly pronounced with archaeological sites which are threatened by unplanned construction, while as submerged archaeological sites, particularly those containing amphorae, have been exposed to devastation due to illegal trade.

Protection of cultural assets is implemented on the basis of annual and long-term plans and programmes which, with the exception of solutions for conservation and restoration works, envisage interdisciplinary research. A certain degree of protection is also performed through spatial planning documents. A re-assessment project aiming to confirm the value of movable and immovable cultural assets in Montenegro, and define measures to improve the state of the cultural assets whose value is endangered, is in its final stages.

2.1.3 Landscape values of the coastal zone

Landscape diversity of the coastal zone represents natural wealth and a significant resource which contributes to tourist recognisability and attractiveness. Cultural patterns as an element of cultural identity and heritage have been created through the influence of human activities on landscapes. Based on valuation of types of landscape character in the coastal zone, three categories of exceptionally valuable landscapes important for preservation of authenticity and beauty of the coastal zone of Montenegro stand out:

- Natural and semi-natural landscapes: marine water area; coast (low and steep – reef and rocky coast); forests, brushwood and forest land (natural forests, brushwood, meadows and pastures); water surfaces (water flows/standing water, torrent flows, wetlands and salinas).

- Cultural landscapes: ambience units and architectural heritage – old towns, sacral objects, fortifications etc., landscaping objects.

- Special agricultural landscapes: flattened fields of alluvial and alluvial-colluvial soil; terraces and plateaus on flysch and karst terrain; special agricultural areas, important for preservation of cultural heritage and landscape characteristics, developed as a result of application of traditional procedures in cultivation and maintenance of agricultural soil (arranged olive groves, terraced areas, etc.).
Landscapes are exposed to the impacts of accelerated transformations that often lead to negative changes. Processes that have the most significant impact on landscape include urbanisation and infrastructure development that undermine the system of linkages and lead to landscape fragmentation. Inadequate siting of tourist and recreational attractions in the most valuable parts of the coastal zone leads to disappearance of natural habitats and homogenisation of landscape. Depopulation of rural areas and abandonment of the traditional way of land cultivation lead to changes in and disappearance of landscape character as a basis of cultural identity of the coastal zone.

2.2 Coastal zone resources

Intensified and often uncoordinated use of coastal and marine resources which we are seeing both in Montenegro and internationally has resulted in competition between different (often conflicting) uses of the sea and the coast, and unsustainable use of coastal zone resources. Besides intensification of resources use, the effects of anthropogenic and natural hazards create additional pressure on coastal and marine resources. In order to provide for sustainable growth and preservation of natural, landscape and cultural values, it is necessary to ensure sustainable, integral and coherent management of Montenegrin coastal zone resources including:

- natural – the sea, water, land, and space;
- economic – primarily in agriculture, fishery and aquaculture sectors, maritime transport and ship building;
- social capital – interconnections and cooperation between social actors; and
- human resources – knowledge and abilities.

2.2.1 The sea

Montenegrin sea consists of two substantially different areas judging by their geographic, hydrographic and oceanographic characteristics: the Boka Kotorska Bay and the open sea extending from the coastal line. The total surface of the marine water area is 6,347 km², and of the territorial sea around 2,100 km² (of which 89 km² in the Boka Kotorska Bay). Maximum registered amplitude of change in the sea level due to tide is 131 cm.

The sea is one of the most important resources and basis of development of economic activities such as bathing and nautical tourism, maritime transport, ship building, fishery and aquaculture. Other than these, the sea offers possibilities for economic activities which are currently not developed in Montenegro – biotechnology, exploitation of living and inanimate components of marine environment for pharmaceutical purposes, exploitation of minerals, oil and gas, energy, and other. Marine ecosystems provide a series of services (production, cultural, and other) which are of utmost importance for economy and wellbeing of people. The overall value of benefits from services provided by marine ecosystems in the Mediterranean basin in 2005 was, for example, estimated to over 26 billion € (Blue Plan, 2010).

Montenegrin marine resources are exposed to numerous and diverse pressures which primarily include impacts of pollution from untreated communal waste water, salted waste, ship building/ repair, from ports and marinas (which as a rule are not adequately equipped to accept waste from vessels and minimise negative impacts on the marine environment), as well as from vessels and industry. Vulnerability Assess-
Map 2-4: Cumulative vulnerability of the sea (average value)

Map 2-5: Total pollution / the extent to which the sea is endangered (maximum value)
ment (based on data from the Monitoring programme on the state of Montenegrin coastal sea ecosystems which was carried out in the period 2008-2011) has shown a high vulnerability of the sea in Boka Kotorska, at certain locations in Budva, Petrovac, Sutomore, Bar, and Ulcinj, as well as at the open sea (map 2-3). The following were singled out as exceptionally vulnerable: narrow part of the Boka Kotorska Bay, part between Bijela shipyard Porto Montenegro port, the Bay of Igalo and the narrow shallow belt from Valdanos to the Bojana river mouth. The narrow coastal belt of the open sea and the Boka Kotorska Bay are also very vulnerable to pollution from possible accidents at the sea.

The map on total level of marine pollution (map 2-4) shows a high degree of vulnerability of the Boka Kotorska Bay and the Bay of Tivat, ports in Budva and Bar, and stretches from Ulcinj to Port Milena. Water and sediment pollution is particularly pronounced in the immediate vicinity of Bijela shipyard and within a short reach from the site of former ship overhaul institute “Arsenal” where high concentrations of heavy metals and organic pollutants have been registered. The level of pollution at the open sea is lower due to relatively big depth and good mixing of waters.

Communal waste water is the main source of sea pollution in the entire coastal zone. Efforts to improve waste water collection, treatment and discharge systems are on-going, whereas a significant improvement has been achieved due to enhancement of sewage networks (connections with main collectors and expansions). A treatment plant with the capacity of 110,000 PE (with two small plants in Jaz settlement) has been constructed in Budva. Other five municipalities do not have waste water treatment plants, but activities to develop project documentation for their construction are under way. The aim is to increase the level of connection of population to sewage systems to 85% by 2020, and to build first phase treatment systems in all municipalities.

2.2 Waters

Montenegrin coastal zone as well as the southern Adriatic marine water area are characterised by a high level of precipitation (with unfavourable seasonal oscillations), but also a high runoff. Due to relatively fast infiltration through the porous surface, water balance is unfavourable, and there is a lack of water in critical periods (vegetative and tourist season periods). Except for the river Bojana, all rivers have fast and short courses with major fluctuations in the flow, and are often of torrential character. Hydrologic observations and continuous measurements over a longer period of time (around 20 years) exist only for the rivers Bojana, Željeznica and Sutorina, as well as for the Boka Kotorska Bay. For the latter the latest observation of water level has been carried out only over a period of 16 years). As for standing waters, there is only Šasko lake in this area. Skadar Lake does not physically belong to the coastal zone, but it is important because of its influence on the upper flow of the Bojana river.

Groundwater sources occur in the form of karst and confined aquifers and aquifers which are formed in specific conditions of the three main hydro-geologic units in the coastal zone (coastal belt, Cukali zone and high karst). Even though drinking water reserves of karst aquifers are significant, they are insufficient for water supply, mostly due to unfavourable precipitation patterns and a steep increase in water demand during the summer period. Salt water intrusion also contributes to problems with using local groundwater springs for water supply. Mineral waters occur in

Map 2-6: Vulnerability of surface waters
the coastal zone of Njivice and Ulcinj. Beside mineral waters, there are also mud deposits significant for balneological purposes. The existing state of exploitable reserves in the groundwater deposits during dry period as well as a poor state of hydro-technical infrastructure point to the need to optimise use of the existing deposits, discover new ones and level the annual flow of the most significant karst springs. Systematic observations of changes in the abundance of either permanent or occasional springs in their outflow zones, changes in chemical traits, salt water intrusion and other important parameters do not exist. Another point of concern is that protection zones have not been defined for all the springs used to supply the coastal region with water.

Permanent and significant intermittent water flows are characterised by a very high vulnerability. The river Bojana has a high vulnerability; Skadar Lake is extraordinarily valuable and it is also characterised by a high vulnerability; Škarad Lake is highly vulnerable too. Zones of smaller torrential flows across the entire coastal region can be categorised as medium vulnerable. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already exposed to exceptional pollution have relatively low vulnerability. Areas already expose...
rence of different types of soil in the coastal zone possible. Terra rossa and chernozem dominate on karst soil, and to a lesser degree calcic cambisol. On flysch and other silicate bases there are eutric and distric cambisol, and in the coastal fields and coves alluvial – colluvial soil. Coastal zone soil is an important resource in economic and ecological sense – as a basis for development of agriculture and an element that allows for preservation of ecosystems stability and numerous services they provide (including erosion prevention).

The largest areas highly suitable for agriculture (map 2-12) are found in the municipality of Ulcinj. These are flat alluvial and colluvial soils – Ulcinjsko field, Sto, Ėaško and Anamalsko fields. In the municipality of Bar, in addition to smaller complexes at the northern part of the municipality, Barsko field is particularly suitable. However, the field has already been urbanised to a large extent and intersected with infrastructure. In other municipalities, areas of high suitability are smaller but still important (Sutorinsko, Kustko, Tivatsko, Mkrivo and Mrtvvo fields stand out).

Smaller complexes of agricultural land where conversion and pollution i.e. degradation of soil would have unacceptable impacts and where future interventions should be avoided to the greatest possible extent are also of major significance. It is important to mention that various documents present substantially different assessments of the existing areas of agricultural land that should be preserved, and also that there is no unique map with quality classes of agricultural land.

Processes and phenomena that have the biggest impact on the loss of important soil characteristics are conversion of agricultural land into construction areas (discussed also in section 2.3 on spatial planning), pollution and erosion (elaborated in section 2.4 on natural hazards). Improper waste disposal stands out as one of the main pressures on soil. As far as possible soil contamination due to improper waste disposal and conversion of agricultural into construction land are concerned, the most vulnerable areas are in Sušobinsko, Gribaljisko Barisko, Grubasko, Ulcinjsko and Anamalsko fields, as well as areas in Kaliman and Sto and arable areas in Lužtica. The coastal soils (including beaches) are particularly sensitive to any kind of pollution from land or the sea.

Locations polluted by harmful and hazardous inorganic and organic matter that have a negative impact on the sea (due to pollution wash off) include land parts of Bijela shipyard and location of the old waste disposal site Knute near Ulcinj. Other than these, soil pollution hot-spot sites also include old waste disposal sites (that have not been remediated) for the towns of Herceg Novi, Bar, Kotor and Ulcinj. Map 2-8 shows total pollution/ the extent to which land is endangered and it covers air and noise in addition to soil pollution.

Pressures generated by improper waste disposal have been significantly reduced since the start of operation of the sanitary landfill Možura that currently accepts around 62,000 tons of communal waste from Bar, Ulcinj, Kotor, Budva, and Tivat on an annual basis. The municipality of Herceg Novi disposes of 14,500 t of communal waste at the temporary disposal site Tisovgrede (while construction of a sanitary landfill Duboki do is planned). Around 16,000 t of construction waste and 45,000 t of biodegradable waste are generated in the coastal zone annually.
of Montenegro is 8-10%. If the share of planned construction areas in the Montenegrin coast) amounts to 5-7%, while the
states, with substantially higher population density than the one in the Montenegrin coastal zone have a lower share of planned construction areas (on average
around 30%, as compared to 46%). The surface of planned construction areas which has not been built yet (19,042 ha) is sufficient to accommodate housing capacities where additional 600,000–800,000 inhab-
naments and diminished original landscape values. In economic sense and with long-term perspective, such a trend leads to decreased attractiveness of the
several times larger than necessary represents an unsoothing use of valuable and non-renewable spatial resources, but also has nu-
portunities and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the
Planning of construction areas several times larger than necessary represents an unsoothing use of valuable and non-renewable spatial resources, but also has nu-
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Sustainable development is of exceptional importance for enabling effi-
cient monitoring of the transformation of space in the coastal zone. The first indicator of intensity of urbanisation processes has been developed by analysing valid spatial planning documents and the real level of development based on orthophoto images from 2011. The analysis has shown that construction areas in the coastal zone are largely oversized in relation to the number of inhabitants and tourist capacities. The share of construction areas in the total surface of six coastal municipalities in Montenegro is 15.5%, whereas only 18.5% have been actually built. The remaining 81.5% of 19,042 ha comprise non-developed construction areas. The same indicators for the 1 km wide belt from the coastline shows that as much as 46% of the territory is planned for construction, out of which less than a third (30%) has been developed.
Map 2-9: Areas of conflict between non-built construction areas and areas of the highest vulnerability

Figure 2-5: Negative examples of the quality of built environment in valuable coastal areas
National strategy on integrated coastal zone management for Montenegro

2.2.5 Natural and anthropogenic hazards

One of the objectives of the ICZM Protocol refers to the mitigation of natural hazards. Although the level of available data and risk assessments substantially differ depending on the type of hazard, a general assessment is that risks from seismic activity in the coastal zone of Montenegro are very high, that risks from erosion and forest fires are significant, and that thewhole area is prone to climate change impact (including sea level rise, frequency and severity of floods, droughts and stormwinds).

The largest areas of high seismic vulnerability (or zones with expected ground accelerations between 0.35 g and 0.60 g) are found in Bar and Ulcinj municipalities (in particular wider surroundings of Ulcinj city), the area around Gornja Lastva, the area of southern slopes of Rumija and Mokra mountains, i.e. the area between the river Bojana and Bar. Areas of high seismic impacts are also found in the vicinity of Sutomore, Petrovac, Budva, Radanovici, Kotar, Risan and Herceg Novi settlements. All the so far research of seismic impacts (including sea level rise, frequency and severity of floods, droughts and stormwinds) has shown that Montenegro is a country with high vulnerability to natural hazards, especially in the coastal zone.

The coastal zone is also threatened by water erosion which is manifested through different forms: surface, mixed and deep, as well as through landslides, alluvial cones, built-up areas and forest preserves. Erosion is most evident in catchment areas of larger watercourses, especially terraces. Areas outside these catchments, consisting of flat and terraced terrains, salt basins, areas of macchia and preserved forest, are not threatened by erosion. Soil vulnerability to erosion is shown on map 2.9.

2.2.5.1 Climate change

Due to increasing GHG concentrations, consequences of climate change have been observed both on global and European models. The most obvious manifestation is increase in air temperature, followed by changes in the quantity of precipitation, temperature of the sea and its salinity, glacier mass decrease, increase in sea surface temperature and changes in extreme weather and climate events.

The observed climate change in Montenegro and in the coastal zone indicate an increase in air temperature, but also in the number of very warm days and nights, while the number of cold days and nights has decreased. On average, heat waves are more common and they last longer. On the other side, extreme precipitation indications (e.g. the number of days with heavy precipitation, maximum number of dry days and extreme precipitation in the overall annual precipitation volume) have statistically insignificant trends, but pronounced annual variability. Results of certain researches show an increase in surface sea temperature of around 0.1°C is expected in the period 2015-2020 compared to the period of 2003-2008, together with faster surface sea currents, primarily in the central Adriatic. In the same period a decrease in the flow of Bojana river is expected.

As for the strength and scope of the impacts of storms, research has shown their increase is expected due to global warming which provides energy for intensification of storms. Because of this, coastal areas will be faced with an increase in the level of flooding, acceleration of coastal erosion, mixing of sea and fresh water and loss of biological diversity. With consequences that will affect economy, the environment, production of food and energy. Along the Montenegro coast, high waves are the main threat as they cause flooding of a wide area along the shoreline, cause damage on nearby objects, beach equipment, docks, etc. This is particularly pronounced in summer, autumn and winter seasons – have been made observations according to which every year since 1997 storms with excessive winds have caused significant fluctuations of sea surface temperature which follows the global increase of air temperature, but also in the number of very warm days and nights, while the number of cold days and nights has decreased. On average, heat waves are more common and they last longer. On the other side, extreme precipitation indications (e.g. the number of days with heavy precipitation, maximum number of dry days and extreme precipitation in the overall annual precipitation volume) have statistically insignificant trends, but pronounced annual variability. Results of certain researches show an increase in surface sea temperature of around 0.1°C is expected in the period 2015-2020 compared to the period of 2003-2008, together with faster surface sea currents, primarily in the central Adriatic. In the same period a decrease in the flow of Bojana river is expected.

In addition to the assessment of existing state by using the joint model of vulnerability to drought, forest fires, heavy rains, and stormy winds, projections of climate change impacts according to scenario developed by the Intergovernmental Panel on Climate Change – A1B and A2 scenarios for periods 2001-2010 and 2071-2100 and spring, summer, autumn and winter seasons – have been made projections of the region of Montenegro on EUB-POM for temperatures at 2 m height and accumulated precipitation. Obtained results have shown that the majority of the Montenegrin coastal region increases due to expected impacts of climate change:

- Under scenario A1B (2001-2030), average annual grades show that droughts, fires and stormy winds in the area of Herceg Novi, Budva and southern part of the coast have the highest im...
National strategy on integrated coastal zone management for Montenegro

Heavy rains have the highest impact in the parts of the municipality of Kotor and in Budva hinterland.

- Under scenario A1B/2071-2100, average annual grades show that vulnerability of the region to drought will increase compared to the period 2001-2030. On average, the coastal region will be an area where droughts, forest fires and stormy winds will have the highest impact during the year (with the exception of Kotor, Budva and Tivat).

- Under scenario A2/2071-2100, average annual grades show that droughts, forest fires, stormy winds and heavy rains will have the highest impacts in the coastal region. Heavy rains will have the highest impact in the hinterland of the Boka Kotorska Bay and hilly-mountainous area towards Budva municipality.

As for the vulnerability to floods, the southern rim of Skadar Lake, the river Bojana, Vladimirovo-suko-binsko field, wider area of Skača Lake and Ulcinj field are the areas of very high vulnerability (map 2-11).

Two groups of characteristics of floods and their consequences can be distinguished in the zones of river courses in the coastal region of Montenegro:

- Floods caused by extremely high water of the river Bojana as a transboundary river between Montenegro and Albania, significantly impacted by waters from the Albanian territory. In cases of major floods regardless of defence embankments, large areas in Ulcinj hinterland, the Ulcinj field and the zone of Bojana’s outflow into the sea (the area around Ada Bojana) will be under water. Among others things, this is due to the fact that defence embankment is not continuous as it enables small watercourses to discharge into the river Bojana. Therefore, in the event of a break in the defence line, significant areas on a relatively long distance from the breaking point can be endangered by floods.

- Floods in the zones of smaller torrential watercourses in the entire region of Montenegrin coast where flow regime is characterised by large amplitudes in the flows and water levels, as manifested in long periods of low flow and occasional drying up, as well as in short periods of large flows due to abundant precipitation. Extreme precipitation causes these watercourses to flow out of their beds and trigger floods of local character. These floods fall into the category of flash floods, and they are characterised by a fast flood wave occurring in the period of up to six hours from the time of intensive precipitation.

Risk from flooding in the Bojana estuary has been increasing due to the influences of sea level rise which is now clearly manifested under specific meteorological and hydrologic conditions. As for vulnerability of the narrow coastal zone due to the impacts of sea level rise, the scenario based on projections of the Intergovernmental Panel on Climate Change (IPCC) has been assessed as the most realistic and probable. This scenario foresees an increase (in relation to the median sea level in the Adriatic basin) of 0.62 m in the digital terrain model of the Montenegrin coastal zone[35]. It is recommended to also apply (now and in the near future) the second scenario of the sea level rise which projects the increase of 0.96 m in the digital terrain model. This recommendation should be applied in all the spatial plans, including short-term planning.

Generally speaking, it is necessary to decrease exposure or sensitivity of the coastal zone by applying special measures or increasing adaptive capacities through activities which are tightly linked with development priorities in order to lower its vulnerability.

Map 2-10: Vulnerability of soil to erosion (analysis done for catchments of significant watercourses)
2.2.5 Economic and social development

Economy of the coastal region makes a significant share of the national economy. As for the tourism sector, the share is predominant. Around 40% of the total number of active companies in the country operate in the coastal zone\(^4\), while the share of employment is at the level of around 28%\(^5\). The economic sectors which stand out based on importance for sustainable use of the coastal zone resources are tourism, agriculture (including fishing and aquaculture) and shipping industry (with ship building). Other activities which by their scope have an important place in the coastal zone economy are trade, construction, road transport and processing industry (small capacities in metals processing, food and chemical industry).

As for the number of companies in different sectors, wholesale and retail sale companies are the most numerous ones in the coastal zone (33% of all the active companies in 2013), followed by companies in accommodation and food services sector (15%) and construction (10%)\(^6\). A similar structure applies to employment: the largest number of employees is in the services sector – over 83%\(^7\). Non-agricultural sectors\(^8\) employ 33.5% while 2.7% of population of the coastal zone is engaged in agriculture\(^9\). Structure of business entities and employment indicates a relatively low level of economy’s diversification which, along with the small capacities in food processing, food and chemical industry (small capacities in metals processing, food and chemical industry).

2.2.6 Agriculture

Due to favourable natural conditions, agriculture represents a significant development potential of the coastal zone with good conditions for production of Mediterranean fruits, olives and vegetables. Mウン区 has determined that total area of suitable agricultural land amounts to around 44,600 ha. Out of this area, the area which is suitable for the three key cultures (olives, citrus trees and grapes) amounts to 21,200 ha, whereas total surface of the optimal area for their cultivation is around 18,800 ha. Areas with the potential for development of more intensive agriculture are flat fields with alluvial-colluvial land spreading from Herceg Novi to Ulcinj (Sutorinska dolina, Kukska, Vrulja and Donji Brčelj – Utrg, Kravari- Bojke – Mide can be included in this category. Other than these, there are numerous areas with low potential for agriculture development or with certain natural limitations. These areas are still important despite somewhat more difficult conditions for using the agricultural land, however it overlaps with other activities i.e. land uses.

Areas with the potential for development of more intensive agriculture are flat fields with alluvial-colluvial land spreading from Herceg Novi to Ulcinj (Sutorinska dolina, Kukska, Vrulja and Donji Brčelj - Utrg, Kravari-Bojke – Mide can be included in this category. Despite large potential for agricultural production,
Montenegro is a net importer of food. In 2013, the share of agricultural products in total imports was 25.7%, while their share in total export was 16.8%. In comparison with the EU countries, Montenegrin products mainly belong to the category of highly priced products. Still, some products have relatively lower prices (wine for example), and thus greater competitiveness. Data about import of large quantities of products which can be produced in Montenegro is worrying (e.g. water). Imports of olive oil as a traditional product exceed exports by 10 times. Another problem lies in the fact that potential for placing domestic products on the tourist market is not used to a significant extent.

Particularly important for sustainable development of the coastal zone of Montenegro is integration of valuable parts of the coast with the surrounding rural areas in their hinterland (rural open spaces) which due to their natural, landscape and other values should remain in their natural state. Rural areas are especially valuable spaces both in economic and ecological sense. They need to provide for the overall production of food and other renewable natural resources for meeting the needs of population, while also having an important role in preserving the quality of natural environment. At the same time, they are irreplaceable oases of social and cultural diversity and have a special importance and value in the overall development of the country. Rural areas and their population maintain diversity and ingenuity of millennium long tradition of co-existence of man and the nature. They live slowly, remember long, maintain tradition, keep homeland symbols and develop a feeling of belonging to a place.

Potential of rural development in the coastal zone can be clearly seen from the data on at least 10,000 ha of cultivable agricultural land which is not used, more than 10,000 officially unemployed in the coastal zone and imports of agricultural products where around 3 million € are used annually for imports of olive oil and citrus only.

2.2.6.2 Fishery and aquaculture

Fishing is one of the traditional sectors of Montenegrin economy which is currently exercised in fishing areas of the coastal zone and the Skadar Lake. Total value of the fishery sector is 74 million €. Not counting aquaculture and fish processing, the sector employs around 400 people (on permanent and fixed-term basis). Although the share of fishery in the national GDP amounts to not more than 0.5%, it has an important sociological and cultural role.

Scientific assessments of marine fish stocks are carried out within the framework of the National monitoring programme of the state of demersal and pelagic resources, as well as within international projects (FAO Adriamed, Meditas and Medias). Based on these estimates, annual number of permits for commercial marine fishing is proposed.

Generally speaking, fish stocks in the Mediterranean and in the Adriatic are near the point of overfishing, and greater attention should be paid to their preservation. Registered catch of sea fish in Montenegro over the last couple of years was rather modest and amounted to 700 - 800 t per year. Due to a lack of comprehensive supervision and control at sea, non-allowed entries of foreign fishing boats into territorial sea of Montenegro have been evidenced, and the same applies to cases of illegal and unregistered fishing on the national level.

Shell fish production amounts to some 200 t annually (it takes place at 17 location in the Boka Kotorska Bay), while production on fish farms is around 120 t.
Even though official data show that fish and shell catches and farming are at a rather low level, examples of unsustainable fishing and increased environmental pressures are nevertheless present.

Fish consumption in Montenegro is among the lowest in Europe (around 4 kg per capita). Fish prices are high and substantially higher than in countries of the region and other parts of Europe. Almost 15 million euros are spent annually on imports of fish and fish products. Causes to such situation lie, among other things, in a relatively small size (101 vessels in total) and old age of fishing fleet (on average older than 30 years), as well as in a lack of organised buying out and processing of fish. A lack of a fishing harbour or separate space for fishermen within the existing harbours represents a major problem. Port taxes in certain harbours are quite high, and in the summer months there is not enough space due to a large number of yachts and luxury boats, so fishermen are forced to keep their vessels at anchor. This is why development of fishing harbours is of special importance for tourism development. Over the last couple of years, more than 95% of the total tourist turnover in Montenegro (measured by overnight stays) took place in the coastal zone. At the height of the season, the monthly number of visitors exceeds 450,000 (which is three times more than the number of inhabitants of the coastal municipalities).

To overcome the existing state in marine fishery and aquaculture, support to strengthening and modernisation of fishing fleet, and improvement of competitiveness and efficiency of aquaculture while preserving fish and other marine organisms resources, is envisaged under the current plans. Adequate siting of fish and shell farms is an important precondition for the effectiveness and efficiency of aquaculture while preserving fishing fleet, and improvement of competitiveness and efficiency of aquaculture while preserving fish and other marine organisms resources, is envisaged under the current plans. Adequate siting of fish and shell farms is an important precondition for the effectiveness and efficiency of aquaculture while preserving fishing fleet, and improvement of competitiveness and efficiency of aquaculture while preserving fish and other marine organisms resources, is envisaged under the current plans.
Positive developments have been recorded for other parameters of tourism turnover as well, which represent continuation of the stable growth trend.

Nautical tourism and cruise ships visits are also on the increase. The number of foreign vessels visiting Montenegro substantially increased in 2013 in comparison to 2012 – from around 3,000 to 3,800 (with around 15,000 visitors), almost a half of the vessels being motor yachts. The number of visitors on round-trip cruise ships increased from a bit more than 244,000 to 315,000 (from 409 cruise ships). Tourists from round-trip cruise ships create significant pressures on the sea and port infrastructure of Kotor (where these ships dock) and its surrounding. Although they are considered important, there are no precise estimates of economic benefits of this kind of tourism for local and national economy.

The most important port is Bar with around 3,500 m of operating capacity, and the capacity of around 5 million tonnes of freight, while other ports4 have a much lower capacity. The number of overnight stays of tourists from Western Europe, for example, was three times higher in 1986 than in 2013. When it comes to employment, estimates indicate that in the period 1985 – 1989 around 50,000 people were employed in and worked for the tourism sector in Montenegro, which is somewhat higher than the total number of employed persons in the coastal municipalities today. Based on this data it could be concluded that economic effects of tourism (data on income are not readily available/ comparable) have remained on approximately the same level, while as pressures on the coastal zone resources and quality of life of local population have increased substantially (due to high crowds and short duration of the season). Considerable efforts invested in tourist product diversification (including a large number of projects, actions and programs aimed at recognizing Montenegro as a unique and year-round tourist destination) have not given major results, and for the time being the main income source of local development is the Boka Kotorska Bay. Recently built berth for mega yachts Porto Montenegro has become a new tourist symbol of the country. Shipyard Bijela is equipped for repair and reconstruction of 10,000 vessels with the capacity up to 120,000 DWT. The shipyard is also equipped for construction of smaller navigation objects such as different purpose barges, pontoons, work platforms and similar.

Ports do not have equipment for reception and treatment of oily water and solid waste from ships. Due to insufficient equipment and inadequate environmental management procedures, ports and Bijela shipyard generate significant pressures on the coastal sea and sediments.

The coastal zone is considered an attractive area for life and work which is why over the last 50 years constant migration has been registered from the north and central parts of the country towards the coast. Over the last couple of years, influx of foreign citizens has also been recorded. According to the Population Census from 2011, the number of inhabitants in the coastal zone was 148,683 (close to a quarter of the total number of inhabitants in the country), which means that the average population density was 93 inhabitants per km2. Population projections by 2020 from the Spatial Plan of Montenegro foresee an increase of around 7%, which would bring the total number of inhabitants in the coastal zone to around 160,000. According to population projections for the Mediterranean, growth rates are higher (over 20% until 2025 compared to 2000).

Population density in certain coastal settlements (map 2-13) in the municipalities of Herceg Novi Ti- vat, Kotor, Budva and Bar exceeds 1,000 inhabitants per square kilometre. Data on migrations within the coastal zone itself shows a pronounced trend of population of rural areas and concentration of popula- tion in the settlements on the sea coast.

Index of demographic resources of the coastal zone is shown on map 2-14. The index is derived from...
demographic (including population growth, migration and age structure) and parameters that refer to the achieved educational level. To calculate the index, data from 2011 Census (by settlements) was used. Based on the values obtained an assessment of spatial units of the coastal zone was made. The units were then categorised in one of the six categories of demographic resources index – from exceptionally favourable to exceptionally weak. Age of population, educational level and other parameters which define available human resources are exceptionally unfavourable in almost all the rural area of the coastal zone, particularly in the municipalities of Bar, Ulcinj, Herceg Novi and Budva.

Index of demographic resources speaks about capacities of a community (in this case about capacity of settlements in the coastal municipalities) for endogenous development i.e. development based on local initiatives and internal social potentials of the given community. Generally speaking, endogenous development is considered more sustainable and socio-culturally more acceptable. However, in the situation of weak demographic resources, improvements are less probable without external incentives, be it from public, civil or private sector through new investments. Such mainly exogenous development brings problems which should be considered in both development and regulations – have been analysed. Particular attention is paid to the achieved educational level. To calculate the index, data from 2011 Census (by settlements) was used. Based on the values obtained an assessment of spatial units of the coastal zone was made. The units were then categorised in one of the six categories of demographic resources index – from exceptionally favourable to exceptionally weak. Age of population, educational level and other parameters which define available human resources are exceptionally unfavourable in almost all the rural area of the coastal zone, particularly in the municipalities of Bar, Ulcinj, Herceg Novi and Budva.

Coastal zone management of Montenegro is in the stage when intensity and complexity of the problems exceed capacities of predominantly sectoral organisation of public administration. Spatial planning and development sector has a sole task and obligation to consider and resolve numerous problems of importance for achieving sustainable spatial development in an integrated manner. Nevertheless, the practice has shown that this sector does not have at its disposal a systemic set of instruments and does not have competences to be able to face the challenges posed by the coastal zone problems.

In addition to the assessment of the existing state and coastal zone processes provided in the previous sections of this chapter, a brief overview of the systemic dimension of managing coastal processes is provided below. Different management systems and administration levels (state and local) which participate in the management with different responsibilities, as well as their basic “products” – public policies, strategies and regulations – have been analysed. Particular attention has been paid to the issue of coordination of sectors and administrative levels as a precondition for resolving all the more complex problems of the coastal zone.

### 2.3 Coastal zone management

*Management* and *coastal zone* are central topics of the NI ICZM MNE. Improving efficiency of public administration and management is a lasting objective. Striving toward management efficiency leads to specialisation, and specialisation develops different sectors which as a rule deal with a set of their sectoral problems individually. However, a characteristic of the coastal zones is a pronounced complexity of natural and social processes within a relatively limited space. Management of these processes that often lead to various problems and conflicts is a necessity. Traditional public administration systems, with their pronounced sectoral approach, are resolving such problems with a limited success.

Coastal zone management of Montenegro is in the stage when intensity and complexity of the problems exceed capacities of predominantly sectoral organisation of public administration. Spatial planning and development sector has a sole task and obligation to consider and resolve numerous problems of importance for achieving sustainable spatial development in an integrated manner. Nevertheless, the practice has shown that this sector does not have at its disposal a systemic set of instruments and does not have competences to be able to face the challenges posed by the coastal zone problems.

In addition to the assessment of the existing state and coastal zone processes provided in the previous sections of this chapter, a brief overview of the systemic dimension of managing coastal processes is provided below. Different management systems and administration levels (state and local) which participate in the management with different responsibilities, as well as their basic “products” – public policies, strategies and regulations – have been analysed. Particular attention has been paid to the issue of coordination of sectors and administrative levels as a precondition for resolving all the more complex problems of the coastal zone.

#### 2.3.1 Policies and strategies

Policy coordination and integration has been a subject of interest in numerous analyses. Nevertheless, there are no precisely formulated objectives and guidelines for their improvement.

National policies do not have clearly defined goals significant for a number of ICZM topics, as is the case in the area of climate change and culture. Other questions of significance for the ICZM Protocol are addressed by a large number of horizontal and sectoral policies, strategies, plans and programmes, on national and local level. Although tasks and objectives defined by these documents are compatible with the provisions of the ICZM Protocol, there are certain conflicts and deficiencies. The most significant conflicts in relation to the ICZM Protocol as well as among different sectoral documents include:

- Preservation of natural and cultural heritage and coastal resources as opposed to further urbanisation, real estate projects, construction of tourist capacities and infrastructure; some of the planned development projects in the coastal zone contain elements which are opposed to the Protocol’s requirements to provide for a balanced distribution of coastal activities, minimise the use of resources, avoid linear coastal urbanisation, establishment of open areas and similar.

- Conflicts between the goals of climate documents: (The Second National Communication, Technological Needs Assessment) and the guidelines of certain sectoral and spatial plans which foresee construction of tourist, infrastructure and other capacities in the zones prone to climate change impacts and important for adaptation.

Ecosystem approach is recommended only in the draft new strategies for biodiversity and forestry (it is also mentioned in the Water Resources Basis, but it has not been consistently integrated in all measures of this document). When it comes to protection of natural values, protected areas are in the centre of attention in all documents, while objectives and protection measures for ecosystems outside protected areas are missing. Protection goals for coastal landscapes exist, however further elaboration of measures for their achievement is as a rule weak. Cultural heritage (particularly submerged) is not adequately protected and is exposed to negative impacts. There are almost no documents which identify specific coastal ecosystems in the manner required by the ICZM Protocol and propose measures to protect their characteristics. To a certain extent, SAP BIO and the Local Plan for Biodiversity Protection of the Municipality of Tivat represent exceptions, the latter paying special attention to coastal wetlands and forests within the territory of the municipality.

The concept of the coastal setback is addressed only in the National Sustainable Development Strategy and climate documents. Deficiencies are also evident concerning the treatment of natural and anthropogenic hazards, particularly coastal erosion, while instrumental hazards and (to a certain extent) climate change are addressed. A lack of integrated approaches in addressing the hazards is also evident (the focus is on improvement of organisations and technical solutions to respond to natural disasters rather than on planning and management of activities to avoid the risks).
Enabling free access to the sea and public use of coastal zone space, prevention of linear coastal urbanisation and planning of activities in line with environmental needs are the principles which national and local strategic and planning documents consider to a limited extent only. The exception is the Spatial Plan of Montenegro (SP MNE) which confirms some of the mentioned principles as the key postulates of spatial planning. Nevertheless, without clearly defined implementation measures, provisions of the planning document of the highest order are not sufficiently integrated into concrete planning solutions.

Decision making on the basis of scientific facts is another requirement of the ICZM Protocol which has not been adequately integrated into national policies. This approach is mentioned in a number of documents, but carefully formulated goals and elaborated set of measures needed for their achievement have not been incorporated.

Other ICZM Protocol requirements are mainly integrated in the goals set under national and local documents. Assessments of the level of implementation of strategic documents have been made in the NIS ICZM preparation process in the framework of analysis of national policies’ compatibility with the ICZM Protocol on the basis of available information and expert opinion. These have shown that main incompatibilities of national and local policies, strategies and plans in relation to the ICZM Protocol lie in the process of their implementation rather than in the way their goals are set. Progress in the achievement of goals of different sectors and horizontal strategies and plans has been mainly evaluated as weak or modest, while as progress with the achievement of a small number of goals has been evaluated as good. According to evaluations contained in this assessment, there are no goals that have been fully achieved in the manner defined by the document itself (within the defined deadline and in the defined scope). A general acceptance of sustainability goals is pronounced, without creation of necessary conditions and coordinated efforts for their achievement. Declarative character of a significant number of documents leads to various interpretations of their goals and contributes to non-implementation.

A lack of technical and financial resources and capacities for implementation of the adopted strategies, programmes and plans contributes significantly to an unsatisfactory level of implementation of public policies. Long-term planning is difficult and unstable, often resulting in unrealistic or overambitious plans and strategies.

2.3.2 Regulations

Issues important for coastal zone management are regulated by a large number of national laws. A number of relevant laws is being amended, while others have recently been adopted in the process of harmonising national with the EU legislation. Although it can be assessed that Montenegro legislation is to a large extent harmonised with the ICZM Protocol requirements, certain important provisions have not been transposed (fully or partially) yet.

Preservation of coastal ecosystems has been pre-scribed by the Law on nature protection and a set of other regulations that recommended application of the ecosystem approach. Preservation and conditions for protection of marine habitats and wetlands are regulated by the Law on nature protection, while the new Proposal of the Law on public maritime domain stipulates that protection of public maritime domain is based on the principles which, among other, refer to the protection of specific coastal ecosystems (wetlands, marine habitats, forests, dunes and islands) and that the future Agency for Coastal Zone Management is responsible for their protection. Spatial development regulations contain guidelines for natural and landscape values and cultural heritage protection.

Obligations from these regulations are reiterared in the SP MNE, at least declaratively, and as a rule without more detailed elaboration of guidelines for specific ecosystems and valuable areas.

Preservation of cultural heritage is primarily regulated by the Law on cultural assets preservation and the Convention on the Protection of the Underwater Cultural Heritage. Nevertheless, in relation to the key requirements of the ICZM Protocol (implementation of appropriate measures for protection of cultural assets, particularly archaeological and historic, protection of findings of submerged cultural heritage), a lack of a provision on it in structural protection of coastal zone cultural heritage has been assessed as the first choice before any other kind of intervention particularly stands out.

One of the key requirements of the ICZM Protocol refers to introduction of the construction setback line at a minimum of 100 metres from the shore. This requirement is partially integrated into national regulations through the Rulebook on closer content and form of planning documents. However, conditions for implementation have not been elaborated for the entire coastal zone (only for the areas outside settlements), and cases when adaptation is possible have not been defined. Determination of the setback, as well as the exceptions to the setback, is responsible for their protection. Spatial development regulations contain guidelines for natural and landscape values and cultural heritage protection are also important. These definitions apply to undertakings with applications for usage of the sea coast, beaches and bathing areas.

There is a difference in the manner in which the ICZM Protocol and Montenegrin regulations regulate the issue of public interest. The Protocol requires that public services and activities are given priority, whereas projects of public interest are also important when adaptation cases in applying the coastal setback are determined. Objects of general interest as defined by the Law on spatial planning and construction of objects mainly refer to objects for provision of public services, but also to production systems that employ 50 and more workers. This is in not in line with the specific requirement of the ICZM Protocol in the context of defining conditions for coastal setback adaptation.

In relation to the requirements of the ICZM Protocol on restricting the coastal zone activities, limitations in the movement of vessels and anchoring of vessels are important, as envisaged under the new Proposal of the Law on public maritime domain. The propos- al however does not define respective penalty provi-sions. In the Rulebook on conditions which must be met for arranged and built bathing areas, the obli-gations from the ICZM Protocol to ensure access paths to the sea has been prescribed. However, the Rulebook also prescribes limited access to hotel beaches for hotel guests only, which is opposed to the ICZM Protocol requirement on ensuring free access to the sea. At the same time, the current Law on public maritime domain prescribes that swimming and public maritime activities are prohibited. A new Proposal of the Law on public maritime domain contains provisions on free and free-of-charge access to the sea coast, beaches and bathing areas.
Harmonisation of coastal activities with the aim of ensuring sustainable use of resources is one of the important requirements of the ICZM Protocol which is partially integrated into national legislation through the principles of the Law on spatial planning and construction of objects (Article 5 on balanced development). Responsible use of resources is addressed through legal acts regulating environmental protection (Law on strategic environmental assessment and Law on environmental impact assessment). However, methodologies for preparing SEAs are often rather formal and quite general. As a rule, they do not include identification of spatial sub-units in terms of their vulnerability to the planned interventions and do not apply quantitative indicators in the assessment of environmental impacts. As for EIA, specificity of impacts of certain interventions which have or can have significant impacts on the coastal zone environment is not recognised (or at least not adequately). This especially refers to interventions that have impacts on mutual relations between the sea and land parts of the coastal zone (navigation routes, exploitation of all kinds of architectonic, construction and technical-construction stone, sea salt exploitation, gravel and sand exploitation, deposition of materials into the sea and aquaculture).

Current regulations on economic activities of importance to the coastal zone (tourism, agriculture and rural development, maritime and land transport, mineral raw materials exploitation) are deficient from the aspect of defining environmental protection measures, including reduction of pollution in the coastal zone, as well as prevention and minimisation of damage due to hazards. Most of the time, they do not go further than recognising environmental vulnerability at the level of principles and postulates i.e. they do not elaborate instruments for assessing sensitivity of marine and coastal ecosystems, and do not prescribe pollution prevention and/or elimination instruments (with the exception of marine fisheries regulations). The new Law on liability for environmental damage represents a significant improvement as it prescribes the obligation to compensate for the damage done to the environment, i.e. the obligation to restore to the original state ecosystem functions and services affected by the damage.

Montenegrin legislation is also deficient in relation to the requirements of the ICZM Protocol on minimising the impacts of hazards. Prediction of possible effects/risk and planning of measures to prevent harmful effects, to adapt and to mitigate the impacts of hazards is only based on implementing the obligations from the specific existing acts (e.g. Law on the Legal Protection of Buildings, UN Framework Convention on Climate Change). Among other things, coastal zone management comprises application of appropriate land policy instruments and measures. Certain elements of land policy can be found in different bodies including formalised processes, lack of necessary data, monitoring of the implementation of measures to mitigate negative impacts that are foreseen in the assessment reports, etc.

2.3.3 Institutions and coordination

Organisation of the institutional system in Montenegro shows that the coastal zone is considered to be an especially significant area. The Public Enterprise for Public Maritime Domain Management is responsible for managing the coastal maritime domain as the most important part of the coastal zone since 1992. A large number of departments, public administration bodies, institutions and local self-government
As regards sectoral (horizontal) coordination, several examples of unclear and overlapping competencies and inefficient functioning have been registered in the previous period. Besides weaknesses in inter-sectoral coordination, problems also exist with vertical (from local to national level) coordination.

Administrative-coordinating bodies established with the aim to improve institutional cooperation and coordination are of special importance. A part of these bodies is also important for the coastal zone too, namely:

- National Council for Sustainable Development and Climate Change comprising President of the state, ministers and representatives of the ministries of sustainable development and tourism, economy, labour and social welfare, agriculture and rural development, transport and maritime affairs, and finance, as well as presidents of local self-governments, representatives of the Institute for Hydrometeorology and Seismology, universities, employers’ associations, trade unions and NGOs, and independent experts. The basic tasks of the National Council are to ensure harmonisation of public policies with the sustainable development policy, to encourage cooperation of the responsible national and local bodies and enable greater participation of business and NGO sector in developing and implementing policies. The activities of the National Council have led to the achievement of significant progress in raising awareness on the importance of sustainable development and integration of sustainability requirements into sectoral policies and activities, as well as to a good progress in creation of institutional capacities for sustainable development. However, the necessary level of harmonisation of sectoral policies, programmes and plans with sustainable development goals has still not been reached, and the same applies to harmonisation of development programmes and projects at national and local level. Insufficient technical capacities for implementation of the National Council’s decisions, a lack of scientific research component and insufficient financial support to sustainable development policy implementation have by large affected the fact that the planned and politically supported process of halting or reversing unsustainable development trends in Montenegro has not taken place.

- The Prime Minister chairs the Coordination Body for Preparation and Follow-up of Tourism Seasons and tourism development in general, which includes representatives of Government department, administrations, authorities and institutions (among others Public Enterprise for Public Maritime Domain Management), local self-governments, tourism industry, technical high schools and tourism faculties, as well as representatives of the media and experts for tourism, NGO sector, etc. The aim of the Coordination Body is to ensure efficient implementation of strategies and action plans in the tourism sector.

- The Council for Spatial Development is a technical and advisory body of the minister of sustainable development and tourism comprising spatial planning and development experts. The aim of the Council is to consider and assess relevant policies, plans and regulations, including the extent to which spatial planning and other documents and regulations of significance for spatial development are founded on technical and scientific standards. In the implementation of various projects, it is a common practice to establish steering and coordinating bodies with the aim to ensure inter-sectoral involvement of project activities. The Steering and Advisory Project Committees thus provided political and technical support to the implementation of CAMP MNE and to the NS ICZM preparation. Representatives of the responsible ministries, Public Enterprise for Public Maritime Domain Management and coastal municipalities participated in the work of the Steering Committee. The Advisory Committee comprised representatives of relevant expert institutions at national level and of expert services of local self-governments from the coastal zone. Although practical experiences show these steering and coordinating bodies do not continue to function in the phase of implementing the project results, based on positive contributions of the Steering and Advisory Committees to the CAMP and NS ICZM, this strategy proposes establishment of a permanent coordinating mechanism for integrated management of the coastal zone of Montenegro.

The Association of Municipalities of Montenegro is important for strengthening the role of local self-governments in the process of adopting and implementing policies and for improvement of coordination. Its mission is to contribute to decentralisation and democratisation of local self-government through provision of services to its members, advocating their interests, and establishing cooperation with state authorities, other national associations and international organisations.

Potentially important coordination mechanism within spatial development system functions in the process of preparing and coordinating development of expected results, as well as with a lack of responsibility in case they are not achieved. Low capacities, lack of experience and technical knowledge important for application of a coordinated approach to management are other characteristics of the existing institutional system, especially pronounced on local level. Despite considerable efforts invested in establishing and encouraging functioning of multidisciplinary bodies for harmonisation of public policies between sectors, there is still an insufficient level of harmonisation of their goals and measures. At the same time, activities of the state administration bodies are to a great extent characterised by a lack of preparedness to act in accordance with set goals, a lack of continued monitoring of the level of achievement of expected results, as well as with a lack of responsibility in case they are not achieved. Low capacities, lack of experience and technical knowledge important for application of a coordinated approach to management are other characteristics of the existing institutional system, especially pronounced on local level.