STRATEGY FOR SUSTAINABLE DEVELOPMENT OF SALINE "BAJO SEKULIĆ " IN ULCINJ

THE STRATEGY OF SUSTAINABLE DEVELOPMENT OF SALT WORKS "BAJO SEKULIC" IN ULCINJ

THE STRATEGY OF SUSTAINABLE DEVELOPMENT OF SALT WORKS “BAJO SEKULIĆ” IN ULCINJ

Ordered by: “Eurofond” AD, Podgorica

Prepared by: MA Consulting, Podgorica

Executive director: Dragana Aćimović

Working team

Dragana Aćimović, MSc in architecture
Dragan Mirović, spec. sci. arch.

Podgorica, April 2015

THE STRATEGY OF SUSTAINABLE DEVELOPMENT OF SALT WORKS "BAJO SEKULIĆ" IN ULCINJ

1. INTRODUCTION

This study was initiated by the need of the management and owner of Salt works " Bajo Sekulic " in Ulcinj (hereinafter: the Solana), while reviewing development potential of space in this area on one hand, and preservation and protection of natural values on the other hand, to come to an optimal solution that would allow the valorization of the area and sustainable development of Ulcinj salt works.

Currently, the only economic activity ongoing in the area of the Solana is the production of salt for human consumption and of industrial salt. However, expert analysis showed that the production of salt as the only Solana activity is not profitable and sustainable, i.e. it operates with loss on yearly basis.

In view of the fact the strategic commitment to preserve and enhance this area, it is necessary to extend the contents with complementary segments of the economy based on the existing natural and manmade resources and potential, which will in addition to the basic activity, salt production, be able to offer to the market other products and services, such as the production and sale of salt-based cosmetics, through appropriate forms of spa & wellness and health programs. Additional valorization of the area would be achieved by expanding the activity to the eco - tourism, bird watching, nautical tourism, aquaculture, recreational and sports activities, organizing cultural and entertainment events (salt harvest), and also encouraging educational and scientific research activities in the area of the Solana.

Since the imperative for the development of this area is preservation and improvement of biodiversity, it is necessary to find the proper measure of development that shall in no way jeopardize the natural value of this area.

The aim of this initiative is to reach consensus of all stakeholders regarding sustainable development of salt works "Bajo Sekulic" through participation of all interested parties, expert arguments for and against certain solution.

2. SALT WORKS "BAJO SEKULIĆ" – ANALYSIS OF THE PRESENT CONDITION

Location and position

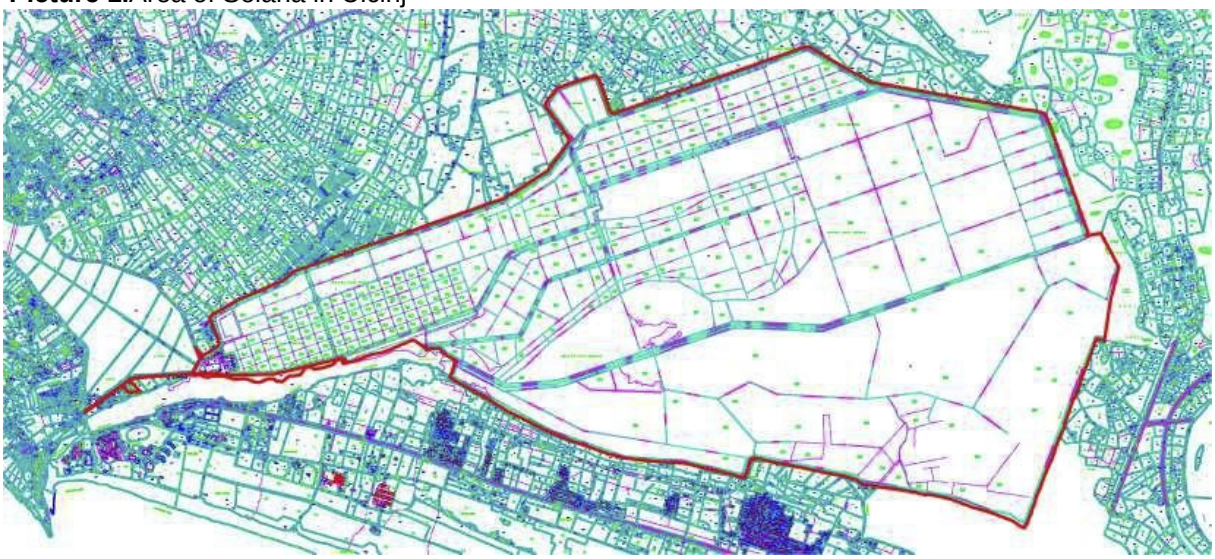
Ulcinji saltworks is a manufacturing complex located on the southeastern coast of the Adriatic Sea which is also the ultimate southeast of Montenegro, in the municipality of Ulcinj, near the state border with Albania. It is located about 1 km of air line eastern from the town of Ulcinj, at 19° 18'5.71" of east longitude and 41° 55' 25.14' of north latitude and occupies an area of about 15 km2 . It is one of the ten largest salt works in the Mediterranean.

According to the cadastral records of the Real Estate Administration, it is located on the following cadastral plots: 30/2, 30/3, 376, 377, 358, 359, 360, 362, 363/1, 363/2, 364, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407 and 410, all in the Cadastral Municipality Ulcinjsko polje, as well as 1242/2, 1258/5, 1258/6, 1258/7 and 1270, all in the Cadastral Municipality Zoganje.

Solana is built on a site with a large number of sunny days, great insolation of 2567 hours of sunshine a year and a very large number of tropical days and solid winds being ideal for the salt producing factory that basis its salt production solely on evaporation.

Presently, it is an artificial, anthropogenic ecosystem, with pre-determined terms for filling the basins with sea water, the water level in them and its salinity. It is surrounded by a channel that drains the surrounding marshes, preventing their water to mix with salt works. Channels drain water into the channel Port Milena, and then into the sea.

Picture 1. Area of Solana in Ulcinj



Source: Publication: „Solana Bajo Sekulić - Ulcinj, Sustainable Development Opportunity " (Short version) (2012)

The Solana is separated from the Adriatic Sea by the Hill from the sea and Velika plaza (the Grand Beach), and by channel and flood embankments from the Bojana river. It is an important part of the catchment system of the Skadar Lake and Bojana River, the catchment area which covers 1,000 km2. Area in Solana under shallow salt water is 1,383 ha (92.2% of the area of the entire complex of salt works), while the channels, dikes, bulkheads, roads, railways and industrial facilities occupy approximately 109 ha (7.8%).
The maximum production of salt by classic and industrial means amounts to approximately 30,000 tons.

Traffic connections

Traffic connections of the Solana are not appropriate, both with the city of Ulcinj, and with the region and it is mainly directed to connection with the main road connections, with cities in the immediate neighbourhood. It is situated 80 km from Podgorica, 68 km from Budva, and 40 km from Shkoder (Albania), the border crossing Sukobin. Bar, with its port and rail hub is located at a distance of 29 km, which is very important when it comes to transportation of bulky goods. The nearest airports are in Podgorica (72 km) and Tivat (87 km).

History

The salt works in Ulcinj was built on the space of a former Zoganjsko blato ("zog" in Albanian means "bird "), i.e. marshes with salty water. The original intention was, by building an artificial channel Porto Milena, to dry out the swamp in Zoganjsko field, so that fresh water could flow through the channel into the sea. However, due to the movement of currents, sea water was entering the channel reaching the wetland zone. In this way the conditions were created for the construction of salt works, in thirties and forties of the twentieth century.

The oldest basins were built from 1926 to 1934. By the mid- twentieth century, the saltworks had been gradually expanded, but it gained in the area early in 80's when it was extended by 60 percent of the total territory, and today has about 1500 ha.

Protection of nature

Solana is in the "sandwich" of the most important ornithological sites on the Adriatic coast and beyond: these are the areas of international importance for stay of birds –Velika plaza, Ada Bojana, Sasko and Skadar Lake and Velipoja in Albania.

The first regulation on protection of the saltworks was adopted in 1984, when the decision of the Workers' Council prohibited any hunting. A few years later, the Solana became the first IBA in Montenegro - the area of international importance for stay of birds, and then the Emerald area of the Berne Convention. It is expected that the Solana will soon be found on the Ramsar list of wetlands - wetland habitats of International Importance, especially as bird habitat. It is the first private nature park in Montenegro.

Emerald area

For countries in the process of joining the European Union, a tailored program was established - Emerald network of protected areas. Emerald is an ecological network made up of areas of special importance for nature protection (Areas of Special Conservation Interest - ASCI). It includes areas of great ecological importance for jeoardized species and habitat types that are protected under the Bern Convention on the Conservation of European Wildlife and Natural Habitats. For candidate countries for accession to the EU, Emerald Network project represents the preparation and contributionin the implementation of NATURA 2000 program. NATURA 2000 is ecological network of the European Union which includes areas important for the conservation of endangered species and habitat types in accordance with Directive on the Protection of Birds (Coucil Directive 79/409 / EEC) and the Directive on the conservation of natural habitats and of wild fauna and flora (Council Directive 92/43 / EEC). Each EU member state contributes to the creation of Natura 2000 network by determining Special Areas of Conservation (SAC), in accordance with Article 4 of the Habitats Directive. Areas must be selected so as to ensure the survival of certain species and habitat types listed in Annexes I and II of the Habitats Directive. In accordance with the Birds Directive, the bird species are determined by the so-called Special Protection Areas (SPA). Areas of SAC and SPA together form a network NATURA 2000. In each such field it is necessary to define and implement management measures that will ensure the so-called favorable state of species and habitat types for which it was protected. The legal basis on which the establishment of the Emerald Network is based rests in Resolutions 4 and 6 issued by the Standing Board of the Bern convention.

On the territory of the municipality of Ulcinj, salt works "Bajo Sekulic" is recognized as a part of the Emerald Network protected areas. Taking into account the population of birds and halophyte vegetation, the Solana is a unique place in Montenegro, which ecologically speaking, today represents the most important area of Bojana River delta for stay of nesting birds, wintering, but also a place for rest and food source for migratory bird species.

A total of eight habitat types referred to under Resolution 4 and nineteen species referred to under Resolution 6 of the Berne Convention are present in the area of the saltworks.

Table 1. Habitat types at the Great beach with Solana

Habitat	**Habitat type**
Mediterranean *Juncus maritimus, Juncus acutus* salty marshes	15.51
Mediterranean salt steppes	15.8
Coastal Mediterranean *Puccinellia fesuciformis*	15.55
Eastern Mediterranean xeromorphic grass community	34.53
Montenegrin ash - oak- forest	44.4325
Coastal formations of willows	44.1
Short Mediterranean amphibious communities	22.341
Dunes	16.2

Source: Ministry of Sustainable Development and Tourism

As wetlands, it meets the criteria of international importance under the Ramsar Convention.

Also, the salt works in Ulcinj represent the Area of international importance for birds stay – IBA (Important Bird Areas). It belongs to a wider area of the delta of the river Bojana, which includes significant habitat for birds. Her ornithological importance is reflected primarily in major colonies of nesting birds, such as Pygmy Cormorants, Spoonbill, little egret, gray heron, herons, yellow heron, cormorants and bittern. In the Bojana delta three types of global significance for protection such as avulnerable taxa (VU - IUCN 3.1) are registered: Dalmatian Pelican (Pelecanus crispus), bustard (Otis tarda) and great eagle (Aquila clanga). The salt works is the most important nesting place, resort during migration, feeding and wintering of birds in the region, on both sides of the border. Up to date, 241 species of birds have been registered at the Solana. Many species wintering in the Solana represent more than 1 % of the European populations.

Picture 2. Dalmatian Pelican (Pelecanus crispus), bustard (Otis tarda) and great eagle (Aquila clanga*anga*)



Sources:en.wikipedia.org www.vogelwarte.ch ibc.lynxeds.com

The salt works is the first in the region that received a complete infrastructure for bird watching and is the first private park of Nature (IUCN management category V / IV). Management of the salt works has declared in 2004 Ulcinj salt works as the first private Nature Park and set up a working unit "Nature Park of Solana Ulcinj." Center for protection and studying of birds has been working for more than a decade on the Solana protection and valorization of its ecological values. Efforts to preserve the lagoon, of great importance for birds, were recognized by the Partnership Fund for endangered ecosystems (CEPF Critical Ecosystem *Partnership Fund*).

Cultural heritage

Facilities of industrial architecture of the potential monumental importance are located within Solana.

The old administration building is located next to the very entrance into the complex, a building with a distinctive ambiance and monumental values. The building is a facility built at the time when the salt works was built. It was built by Gvido Gvizigovi following the pattern of administrative buildings of the European salt production factories. The building has preserved the original appearance, and also preserved the original design, interesting because the facility is based on piles. This building together with the salt basins represents a unique example of industrial architecture. Traditional way of collecting the salt also forms a movable cultural heritage of Ulcinj.

In the complex of the Solana there is a memorial bust dedicated to the pre-war solder of national liberation war -NOR, revolutionary and communist Bajo Sekulić from Danilovgrad.

3. PLANNING BASE

Spatial Plan of Montenegro (PPCG)

In the Spatial Plan of Montenegro Ulcinj the area of salt works is planned as a part of the development corridor 3. Ulcinj - Bar - Budva - Boka Kotorska. In paragraph 2 CONCEPT OF ORGANIZATION AND USE OF SPACE, the goal O2.1-1. , is defined as follows:
"Development corridors describe areas along which core development activities are concentrated. These corridors are an appropriate instrument to concentrate traffic lines and to create conditions for economic development. Locations of development corridors are defined by geographic structures, as well as the need to preserve areas in between, and possibly in larger size for purposes of nature conservation, tourism development and agriculture.

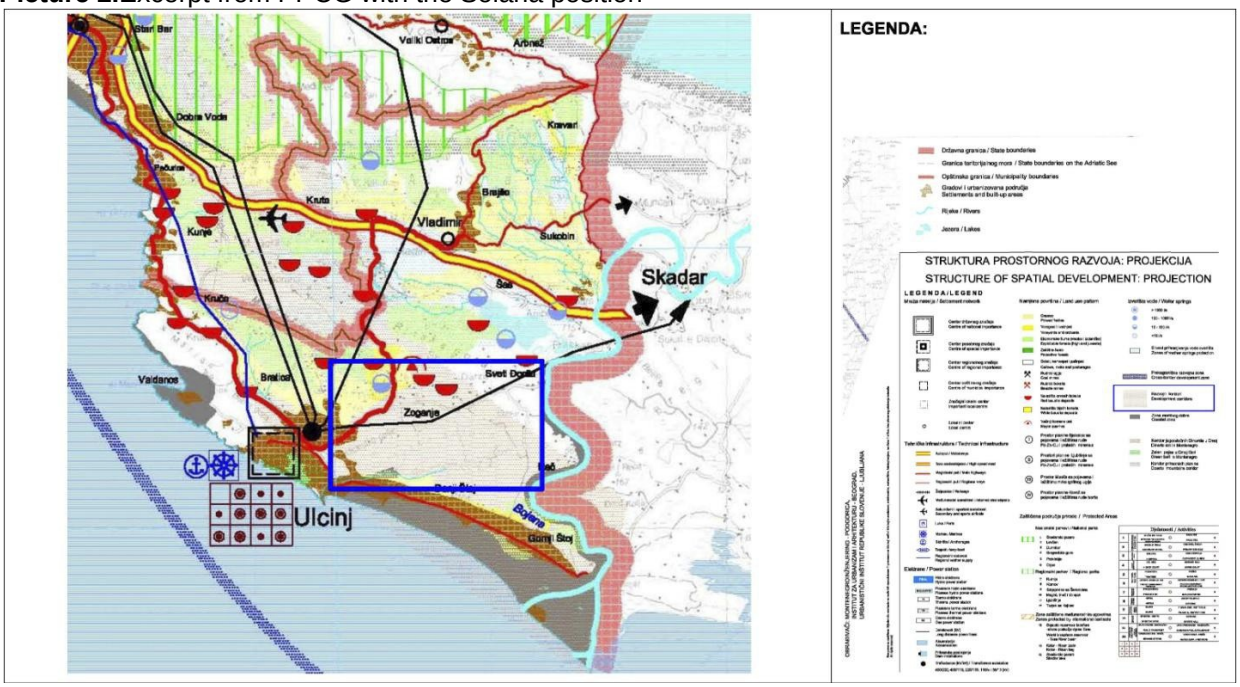
Point 2.4.3. Spatial concept of tourism development, highlights the need for a balanced development of tourism that meets the social and environmental conditions, as follows:

"2.4.3-1 All investment applications for construction of larger tourist facilities must be in line with expected assessments of sustainable development, with expected economic impact on the region and complete social impact.

2.4.3-2 In protected areas or in those planned to be protected, investing in new, additional or extension of existing tourism facilities (hotels, marinas, ski infrastructure, etc.) can be done only on the basis of spatial and urban planning for the given area.

Explanation: So far there were no reliable and solid basis for the development of protected or planned protected areas which could provide clear guidelines for specific areas. This also includes provisions for the development, social and ecological capacity and carrying capacity.

Picture 2. Excerpt from PPCG with the Solana position



Source: PP CG 2020.

"In point 2.4.3.1., Coastal Region, the goal 2.4.3.1-3 **Transformation of military complexes and industrial zones in tourist zones**, it is stated as follows:
"Termination of industrial and military activities will provide potential for the creation of new tourist zones within the coastal zone." Salt works in Ulcinj is one of the sites recommended for the redevelopment from industrial into tourist zone.

At the same point, the goal 2.4.3.1-4, it is stated that:
"The development of tourist accommodation along the coast should be very carefully planned, because the capacity of municipalities in the region is almost exhausted. The number of tourists in the high season from of July to August produces negative effects, such as overloading of transport infrastructure, congestion of urban centers, due to the lack of parking space, water shortage, beach and road pollution, etc." Development of tourist accommodation in the municipality of Ulcinj will focus on the following locations: "Valdanos, Velika plaza with its deep hinterland, as well as the Solana and Ada Bojana respecting the sustainable development principles and natural values."

The goal 2.4.3.1-5 indicates as follows:
"Health and wellness tourism will be developed within the "Sunny Beach Health" program. Suitable locations for health and wellness tourism include Igalo, Prčanj, Petrovac with prospects for development of these forms of tourism in the area of Solilo (if this is in accordance with strict protection regimes) and Ulcinj. "

Spatial plan of special purpose areas for coastal zone (SPSP)

The preparation of this planning document which should soon be presented in draft form is in progress.

4. ANALYSIS OF POSSIBLE DEVELOPMENT SCENARIOS FOR SALT WORKS “BAJO SEKULIĆ”

4.1. Achieving a balanced growth of the municipality of Ulcinj

It is certain that development in the tourism sector will continue to support the local economy in the municipality of Ulcinj. However, tourist season will bring benefits to local business and labor markets only through the spatial and tourism diversity. Tourism and resources of immediate environment are closely related, as the rural hinterland is the one offering opportunities for the development of specific market niche (niche tourism) tourism, as well as outdoor activities - hiking, biking, extreme sports, agritourism and ecotourism. It is vital for Ulcinj to engage a significant, long-term, off-season incentives for employment in order to prevent migration to other areas of Montenegro or abroad.

United Nations research shows that more than one third of the passengers gave advantage to ecological tourism and is ready to pay for a specific experience that this type of tourism brings. It is anticipated that eco-tourism, cultural and natural heritage and active tourism will achieve rapid growth in the next two decades. It is estimated that spending on eco-tourism is increasing and consumption in this area is about six times more than in other areas of tourism

Tourism is a human resource demanding activity. The UN estimates that for each position opened in the primary tourist industry, one and a half position is further opened in the economic segment related to tourism. It is expected that a sustainable approach to tourism will enhance the potential for employment in this sector, with a stronger emphasis on local culture and environment. Most tourism activities are carried out by small and medium-sized enterprises that have the potential to achieve higher revenues by applying the principles of sustainable development. Public - private partnerships can share the risk of large investments in sustainable tourism. The development of eco-tourism should encourage the growth and development of other economic sectors, such as development of local agriculture and food production, construction, fishing and fish farming and other edible seafood farming, maritime / marine services, application of technology for production of energy from renewable sources and services associated with the strengthening of the municipality of Ulcinj as sub-regional center.

4.2. The possible development scenarios for salt works "Bajo Sekulic"

Development scenarios represent possible planning choices of different development options for a certain area. The scenarios consider the potential impacts on all resources (non-renewable

and renewable, natural and created). Comparison and evaluation of scenarios allows consideration of the advantages and disadvantages of the proposed variants for planning, development, utilization and protection of space, as well as the preconditions for their implementation (spatial, infrastructural, demographic, organizational, economic, political, etc.). The scenarios present positive and negative consequences of planning, development, utilization and protection of space, without detailed consideration of the program development and purpose of the area. The proposed scenarios are not giving a final solution, but rather handle key issues related to the possibilities and consequences of a possible planning, development, utilization and protection of space.

The existing production facilities of the salt works are in very poor condition, and significant financial investment is needed for setting up the water management process at the salt works and for salt production. From the analysis of the Profit and Loss Statement and presented salt production by years in the previous period (2005-2013) it can be seen that significant loss was generated in operations in all the observed years i.e. the Solana was not able to achieve profitable operations even in the years when the salt production was close to the installed capacities.

In the recent years, the situation in the Solana has considerably deteriorated. Deterioration refers to the condition of facilities for salt production (basins, channels, partition walls), equipment (damaged and stolen pumps, old equipment that requires to be almost completely replaced and new capacities on modern basis installed) and ruined main warehouse of finished products.

The market, though poorly investigated and covered has been pretty much lost in recent years. Lack of skilled labor force as well as inappropriate product assortment also represent a hindrance to profitable business.

Although the company has a tradition of over 80 years, it is obvious that running of salt production in Ulcinj would require substantial investments, primarily in maintenance of the existing capacities and replacement of obsolete and inadequate resources, as well as for the introduction of new modern production lines. Also, investments are necessary for recruitment of human resources, exploration and conquering markets, extension and adjustment of production assortment, improvement of technological process in accordance with the standards. Due to the significantly shrunk market, fierce competition that comes up with fairly low salt prices, high production costs, profitable production could hardly be achieved in the present circumstances.

The optimal and sustainable development scenario must reconcile the pursuit of maximum possible economic prosperity i.e. economic sustainability of this development, but also minimal negative impact on the natural and social environment. The next chapter will consider **two development scenarios** and examine the possibility of development: **Stagnation and Sustainable development**. The first assumes continuation of the previous trend, while the other provides balanced and sustainable development.

4.2.1. Scenario 1: STAGNATION

This scenario assumes continuation of the previous development and production volume as monofunctional industry. This implies limited economic development and new responsibilities in order to overcome the current economic problems. On the other hand, due to slow economic growth, natural resources and space will be protected.

Funding from government sources encourages projects in the field of environmental protection.

A slight increase in or stagnation of employment in the private sector (salt production, eco-tourism, hospitality and services) is expected.

4.2.2. Scenario 2: SUSTAINABLE DEVELOPMENT

Sustainable economic growth scenario integrates economic, social and environmental objectives aimed at achieving sustainable growth, diverse and locally oriented economy, capable to adapt

to the challenges imposed by the changing global economy. Versatile tourist model is combined with strong economic, social and environment protection strategy that allows innovation and investment of different proportions in a diverse economy geared towards tourism, agriculture, food production, industry efficiency, construction, environmental management and new services. Economic valorization of the environment involves engagement of the Solana in an attractive eco tourist offer of Ulcinj, which can be one of the major factors for the increase of direct and indirect employment of local people in complementary economic branches.

This scenario assumes a sustainable capacity building in the tourist accommodation, increase in quality of tourist offer, economic development, but in a controlled and directed construction of smaller scale. Inactive economic zone shall be to a lesser extent converted into high quality zone of eco-tourism, but also for education, scientific research activities, recreation, sports, cultural and entertainment activities. With economic development, in addition to tourism, agriculture and "clean" manufacturing industry, growth is expected in sectors that are directly and indirectly related to protecting and improving the environment in the production of electricity from renewable sources (solar energy).

Given that development takes place in an existing industrial zone, changed use of the existing built facilities is encouraged ("brownfield" projects) with minimal new ("greenfield") construction. New construction is such that it minimizes the impact on the environment and the negative social effects.

According to this scenario, development must be coordinated with the assistance of the public sector, which could provide the infrastructure equipment, consulting support and targeted subsidies. In a broader context, in this scenario the Solana, as well as the municipality of Ulcinj should be developed as a place offering wide range of development opportunities, as an area where you can work and earn, where chances of success are equal for all and as a community with a high level of social services and social justice.

Table 2. Comparative overview of the basic features of potential development scenarios of the Solana

STAGNATION	SUSTAINABLE DEVELOPMENT
Economy development	
• A small volume of major investment in the construction of business facilities and economic development • Maintains the existing commercial zone with the tendency of declining production • Marginal development of eco - tourism with small (inadequate) economic effects • Further devastation of facilities of industrial architecture • No increase in the level of services in tourism • The exploitation of mineral resources (salt production) will stagnate until complete suspension • Continued decline employment rates and dismissal of the majority of employees • Lack of quality tourist offer and accommodation capacities for further development of tourism • Project "Ulcinj salt works as ecotourism destination" is funded by the Partnership Fund for endangered ecosystems (CEPF) • No support to local agricultural production • Low productivity and equipment • Low value of capital compared to operative budget of the Solana	• Development of sectors that are directly and indirectly related to the protection and enhancement of the environment • Diverse economic base - tourism, services, manufacturing , production of souvenirs and "clean" production activities • Planned , organized and controlled construction of economic, tourism, catering and other facilities • Economic development is carried out in a predetermined economic zones which encourages conversion of the existing built structures (" Brownfield " projects) with minimal " greenfield " building • Each development and construction , with the protection and improvement of environment will be followed by construction of necessary infrastructure • Inactive economic zone and facilities will partly change the purpose into the high-quality tourism and service zones and zones of education, scientific research activities , cultural and entertainment events and "clean" production • Valuation of cultural and historical values of the Solana for tourist purposes

Table 2. Comparative overview of basic features of potential development scenarios of the Solana

STAGNATION	SUSTAINABLE DEVELOPMENT
	• Sustainable development of specialized, noninvasive tourism of small and medium-sized scale for a wide range of potential tourists throughout the municipality of Ulcinj, with a viewt o present natural and cultural values: museums, eco-tourism, cultural events • Focus on a niche market (highly specialized sectors) of tourism that include hiking, cycling, extreme sports, bird watching, interpretation of ecology, cultural and agro-tourism • The sale of food and craft folk handicrafts, restaurants, accommodation, holiday farms and "classroom in nature" • It improves the quality of tourism, accommodation and service level • Prolongation of the tourist season with development of the tourism sector - eco, health, spa & wellness, sports and congress tourism • Affirmation of traditional local products • Options for funding through the Investment Development Fund (IDF) • Exploitation of mineral raw materials will increase, but with the application of protective measures (Recultivation of degraded areas) • Investments in renewable energy sources (electricity production using photovoltaic panels), solar collectors for water heating and space, biomass energy • Employment rate is expected to increase especially in labor-intensive sectors of the economy: tourism, food production, construction and through employment in the sector of protection and improvement of the environment quality, in culture, services, trade • Increased demand for high quality locally produced food and crafts products • Sustainability in terms of production of foodstuff for indigenous and visitors • Support from the local supply network and strategically placed sites for direct sales in tourist areas decrease in the rate of unemployment and the number of long-term unemployed persons • Improvement in the structure of employees by acquiring the necessary knowledge and skills • The implementation of development projects will be funded from local, national and available international (EU) funds, as well as by domestic and foreign investors • Investing in knowledge and skills through direct investments • Foreign investment, especially in infrastructure projects that have the character of sustainable development of production and use of energy from renewable sources, energy saving and environmental protection • The value of capital in relation to operative budget of the Solana will grow

Table 2. Comparative overview of the basic features of potential development scenarios of the Solana

STAGNATION	SUSTAINABLE DEVELOPMENT
Environment	
• Due to lack of funds the scope of solving environmental problems and improving environmental quality will be limited • Flooding in the surrounding area, possibly the Solana itself at the time of hydrological maximum • The negative visual impact of abandoned industry • Preserving the quality of certain environment elements (air, land, biodiversity, arable soil, noise, water) due to limited economic and urban development • Gradual deterioration and vegetation of basins due to reduction and cessation of production	• Resolving environmental problems and improvement of the environment quality shall be funded out of the budgetary funds and other sources • Improving the protection and management system of protected areas and increasing areas under protection the problem of flooding of surrounding area at the time of hydrological maximum will be resolved • Preservation of agricultural land (desalination measures) • Increased use of renewable energy sources (Solar, biomass, wind) • Development of Energy Efficiency Measures • The production is based on modern technologies, without negative impact on environment • Maintain and improve the quality of all elements of the environment (air, land, biodiversity, arable land, noise, water) due to sustainable economic and urban development • Strict measures for the protection of natural and cultural values (cultural goods, areas and facilities of protected nature) with the definition of their carrying capacity • Improvement of visual identity - renovation and affirmation of industrial architecture as a cultural heritage
Infrastructure	
• Limited investment in infrastructure and utilities in order to resolve existing environmental problems, improving infrastructure system, primarily in the function of environmental protection and improving the quality of life of the population • Slight improvement of the existing infrastructure systems	• Increased investment in infrastructure and utilities services in order to resolve existing environmental problems, improving infrastructure system , primarily in the function of environment protection • Gradual improvement of the current utility infrastructure (water supply ,roads, drainage and wastewater treatment, electrical supply, the availability of mobile telephony, collection and treatment of municipal waste) • Gradual investment in improving the existing and construction of new road infrastructure for better access to housing and tourist zones • The development of maritime transport and nautical tourism • Development of an integrated system and environmentally acceptable public transportation for employees and visitors • The development of a network of hiking and biking paths as recreation contents
Floods and climate changes	
• Agricultural and other land will be protected against floods through the maintenance of the existing network for defence against flood and its reinforcement where it is necessary to increase the level of protection • The state subsidies will be required to improve the system and implement protection measures against floods and measures for mitigation and adaptation to climate changes	• Agricultural and other land will in broader neighbourhood will be protected from flooding through maintenance of the existing network for defence against floods and its development and reinforcement where it is necessary to increase the level of protection • The proposed development will consider scenarios of forecasted climate change and will include measures for mitigation and adaptation

Table 2. Comparative overview of the basic features of potential development scenarios of the Solana

STAGNATION	SUSTAINABLE DEVELOPMENT
Administrative capacities	
• The existing business barriers will remain and that will pose a problem in attracting investors, especially for manufacturing and tourism development projects • Tendency of reducing the number employees will continue • Educated and experienced experts will continue to leave for other areas of Montenegro, but also abroad	• Conditions for the removal of existing business barriers will be improved and conditions (location wise, systemic, financial , etc.) for attracting investors , especially for manufacturing and tourism projects will be crated • Strengthening of professional staff in the relevant institutions qualified for the control and implementation of sustainable development • Educated and experienced experts will continue to leave for other areas of Montenegro, but also abroad , however in far lesser extent than up to now • Return of professionals who have left and attracting new ones • Acquiring new knowledge and skills through school system and non-formal education and retraining of the workforce • Certain excess of employees in the public sector will be employed in the private sector in industries planned to be further developed

Source: MA Consulting analysis

4.3. SCENARIO ASSESSMENT

The following indicators were selected for scenario assessment:

- ☐ Social infrastructure
- ☐ Culture
- ☐ Form and space
- ☐ Health and vitality
- ☐ Transportation
- ☐ Involvement of stakeholders
- ☐ Land and soil
- Biodiversity ☐
- Waste
- Use of water
- Wastewaters
- Energy
- Climate changes
- Air quality
- Economic effect
- Selection of location
- Employment and qualifications
- Equality
- Management and reporting
- Risk
- Food and agriculture.

Evaluation of scenarios has the following features:

negative /undesired effect	mark	**0**
neutral effect	mark	**1**
positive/desired effect	mark	**2**

Table 3. Evaluation of possible development scenarios of the Solana

STAGNATION		SUSTAINABLE DEVELOPMENT	
Social infrastructure			
0	The lack of significant economic growth means that there would not be plenty of room for improving social infrastructure	Significant improvement is predicted in the education capacity increase, particularly in the areas concerning tourism, hospitality, environment protection, organic production and scientific-researchwork.	2
Culture			
1	It is estimated that there will be no change in the cultural diversity as it will be very little developments or changes in economic and cultural environment.	It is expected that cultural heritage sites will be protected. Promoting new cultural contents which rely on local tradition	2
Form and space			
1	There will not be a lot of construction, but the elements of landscapes will not be protected and further improved	Size of facilities that are built in accordance with demands for the preservation and improvement of the landscape, applying higher degree of the existing space protection.	2
Health and vitality			
1	There are less specific interventions which seek to to improve social cohesion.	Social cohesion will be improved, as the offer of work places will be more diverse, which will involve different segments of the society .	2
Transportation			
0	There will be little opportunity for advancement of sustainable transport infrastructure beyond the currently existing one.	Infrastructure of pedestrian and bicycle paths will be improved , as well as nautical traffic, road infrastructure and parking problems	2
Involvement of stakeholders			
0	The involvement of stakeholders is currently below the minimum standards , which is based on the provision of information , instead of interaction with stakeholders.	It is necessary to enter into dialogue with the relevant stakeholders and take into consideration their comments and objections. It is necessary to provide appropriate mechanisms for providing feedback	2
Land and soil			
1	The lack of construction will result in better soil conservation, but less investment in land management will reflect badly on quality and drainage and possible fouling of the surface	Investments in development will result in active land management , which will lead to improving the quality and drainage of soil.	2
Biodiversity			
1	Species and habitats will be protected from construction, but due to lack of investment in maintenance of salt production the existing biodiversity will be jeopardized.	Biodiversity will be promoted in accordance with international standards. Construction will respect the needs of the environment.	2
Waste			
1	Current treatment of waste processing is not in accordance with European standards, but due to the suspension of production, the amount of waste is also reduced.	Reducing the amount of waste and its proper processing in accordance with EU regulations.	2
Use of water			
0	Lack of construction means that it will be very few opportunities and available resources to improve the current situation.	The efficiency of water consumption is likely to improve with more efficient installation and reduction of malfunctions and leaks. In addition, certain quantities of rainwater will be a used again.	2
Wastewaters			
0	The lack of construction means that there will be very few opportunities and available resources in order to improve the current situation.	It is expected that waste water treatment will improve, because new infrastructure will be built according to European standards. .	2

Table 3. Evaluation of possible development scenarios of the Solana

STAGNATION		SUSTAINABLE EVELOPMENT	
Energy			
0	According to the current practice, there is no commitment to the rational use and reduction of energy consumption	There will be an improvement over the current state, by setting the criteria for decrease in energy consumption and increase in energy production from renewable sources in new constructions. Additionally, the existing facilities will be adapted in accordance with higher energy efficiency standards.	2
Climate changes			
0	It was considered to what extent is Solana prepared to bear the consequences of climate change (adaptation), and commit to act in order to reduce emissions of greenhouse gases (mitigation). Ulcinj salt works currently has no strategy related to one of these aspects.	Although it is estimated that not significant financial resources will be directed for mitigation of the consequences of climate change, economic potential associated with climate changes will more easily arise within more diverse economic environment.	2
Air quality			
2	Air quality is expected to improve due to decrease in production volume and use of space.	Initial air quality will be slightly improved, because more possibilities for application of EU regulations will be opened.	1
Economic effect			
0	Social and environmental costs are minimal, but is unlikely to have economic growth	Considering a diverse economy within the Solana, following the creation of wider social and environmental values, good results will be generated in this area.	2
Location			
1	Existing industrial objects, plants, basins, channels, dams, roads etc., are currently on site and decaying due to the suspension of production.	Various development of economic activities and use of space in which industrial facilities are located (brownfield site) .	2
Employment and qualifications			
0	There is no employment and qualified labor force.	There will be more opportunities for employment. Economic development and diversification will bring along opportunity to increase the qualifications of local population, especially in the field of tourism , spa & wellness, environmental protection, other services, etc.	2
Equality			
0	Promoting equality is not possible because it does not create wealth that can be equally divided.	Sustainable development can only be achieved if the performance scores are equally distributed to all interested parties. This is made possible by emphasizing activities that will involve local workforce, products and services	2
Management and reporting			
0	It is estimated that the current state of management and reporting is unsatisfactory. Progress monitoring towards achieving the objectives of sustainable development and public reporting thereof is weak.	Improved management and system reporting is anticipated along with indicators of sustainable development ,which will be publicly reported	2
Risks			
0	No consideration and quantification of risks, such as climate change and the threat to environment	A comprehensive framework will be developed for managing risks, climate change, as well as the risks worsening the situation related to the environment	2

Table 3. Evaluation of possible development scenarios of Solana

STAGNATION		SUSTAINABLE DEVELOPMENT	
Food and agriculture			
0	No impact on development in this industry	The development of eco-tourism conditions demand for quality local food produced in environmentally friendly ways .	**2**

Source: MA Consulting analyses

4.4. The most favorable scenario

Sustainable economy is considered to be the one that enhances vitality in a particular area, preventing damage to the local economy, and taking into account the value of services related to the ecosystem. It represents the broadest definition of good relations between investments and results, equally encouraging social and environmental values.

Scenario of sustainable economic growth consistently shows to be better than the other scenario, provides a basis for more versatile developing and therefore achieves the best results in many areas. The economy is more flexible and stronger; the emphasis is more on the needs of the local population. At the same time, it protects and enhances the environment, while providing the necessary infrastructure.

5. ULCINJ SALT WORKS: SUSTAINABLE ECONOMIC GROWTH

5.1.Analysis of examples from international practice

The vision of the development of Ulcinj salt works draws on lessons learned based on analysis of international practice. The Solana has significant potential for the development of eco-tourism that would provide for sustainable economic performance in the future. Lessons learned from other markets in transition and developed markets are the key to the future success of the area development.

5.1.1. Management of ecological capacity of vulnerable areas

Case Study: Cinque Tere (Cinque Terre), Italy

The territory of the Cinque Terre located on the northeastern coast of Italy made the sustainable tourism project to protect the culture, heritage and environment. The area was designated for National park in 1999, and enrolled in the UNESCO protected area since 1997. Cinque Terre is an area known for its five small villages which can be reached only on foot or by train: Monterosso, Vernaza, Corniglia, Manarola and Riomagiore, but in addition to this a large number of tourists had a significant impact on the environmental conditions of the area. Sustainable Tourism Project was established by Environmental Quality Brand for accommodation facilities, a card "Cinque Terre", guidelines for tourists and public information on protection and preservation. In order to control the number of tourists, "Cinque Terre" Card allows access to all paths, nature observation centers, botanical trails, picnic areas and places for birds' observation. Tourists who explore the region can purchase a one-day, three-day or seven-day cards that also provide them unlimited access to the train and bus between five villages. Income from the cards is invested in protecting trails, marine and national parks, maps production, train and ferry services. A list of all economic sectors included in this program is established, including accommodation in energy-efficient buildings that use and technology to save water. The whole system supports the purchase of local products, recycling and the use of sustainable transport. Promotional flyer offers visitors and the local economy simple and specific advice on how to reduce impacts on the

environment, support the local economy and protect sensitivity of the area.

5.1.2. Provision of socio-economic benefits through tourism

Case Study: Grutbos (Grootbos), South Africa
Natural reserve Grutbos and Walker Bay Fynbos Conservancy was founded in 1999 and currently have 21 landowners who manage around 12,000 acres of terrain "fejnbos", i.e. terrain overgrown with low vegetation and grass. Tourist Complex with 5star is based on the conservation of natural resources of the area, but also has a private foundation that conducts a range of socio-economic initiatives.

The "Growing the Future" initiative trains the locals to cultivate vegetables and fruits, to be engaged in beekeeping and the basic principles of sustainable livestock production. Since 2003, over 80 people have received diplomas and thus supported development of good practice in the wider economy.

The "Green Future" project provides for annual training programs based on practical work for the unemployed local people in the field of landscape architecture, horticulture and eco-tourism. The projects are designed to develop a sustainable source of income for members of the local community, while propagating the ethics of nature conservation.

The "Spaces for Sports'" initiative offers multi-joint facility in the center of three different communities in Gansbaai: Masakhane Township (12,000 inhabitants), Blompark Community (5000 inhabitants) and Gansbaai Community (8000 inhabitants). More than 300 children every year use this center for sports and leisure activities.

Guests who visit Grutbos can participate in the project "Future trees" where they are given the opportunity to plant a tree in the forest Milkwood Forest, which was destroyed by fire in February 2006. To date, about 1,000 trees were planted. Each guest receives a certificate of planting the tree with the coordinates of where his tree was planted. GPS coordinates are entered on Google Earth and guests can follow the progress of the tree.

5.1.3. Promoting ecotourism based on the nature

Case Study: Gura Portitei, Danube Delta, Romania
The Danube Delta is one of the largest wetlands in Europe. About twenty percent of the Delta Danube is situated in Ukraine and eighty percent in Romania. It consists of 150.000 ha of alluvial islands, marshes, tributaries, channels and lakes and is internationally recognized for its biodiversity as a very important place (there are three wetlands to Ramsar Convention, the part that is located in Ukraine and one in Romania). This area is home to over 70 species of fish, 225 species of birds, 500 species of plants and 22 species of mammals. In August 1998, more than 46,000 ha of the delta was included in the Biosphere Reserve on the Danube. The wealth of wildlife and plants, especially birds, makes the Danube Delta a potential top-destination for ecotourism.

Since 1980 coastal erosion in Portitei has been present. It is assumed that this is a consequence of hydraulic works performed in the area of Sulina, especially of prolonging malls in Sulina, which led to changes in ocean currents and reducing the recovery of sand in the beach areas. Therefore, they developed projects for coastal protection in Gura Portitei to ensure the stability of the coast in the next fifty years.

In addition to the natural environment, the Danube Delta offers to tourists unique historical monuments and cultural tradition that will enrich the experience of visitors. The development of eco-tourism largely depends on protection of natural ecosystems and cultural values tied to them with benefits of well managed tourism flowing into the local community through local operators, guides and facilities. Eco-tourism will provide additional positive benefits of activities related to

wet areas that support populations of Delta and further motivate the protection and preservation of wet areas.
A new tourist complex was built using the principles of sustainable development and it consists of 72 bungalows, 158 places in cottages, hotels and camping areas. The development plan includes a system for wastewater treatment and drinking water systems designed to protect sensitive environment.

The population supports measures to protect the environment while at the same time the development of ecotourism has created new jobs and provided the possibility of alternative revenues as a complement to traditional fishing and agricultural industries.

5.1.4.Introduction of new and environmentally friendly technologies in the production of salt

Case Study: Salt works Pag, Croatia

Salt works Pag in Croatia represents a positive example of the success since it introduced a mixed solar- thermal technology for salt production. The principle of obtaining the salt consists of the fact that the sea water is continuously released into the system of shallow and fenced basins for evaporation and is exposed to the action of solar energy and wind. In this way, the sea water condenses to a density of 24 ° Bé, and then such a sea water is fed into the vacuum plant where matching is performed on the principle of expansion in vacuo. Process steam is used as heating during the evaporation.
Since the recent modernization of the salt works, technological steam was produced in the boiler room, which used fuel oil as source of energy for heating. In late 2012, works began on construction of a new boiler room, which uses forest biomass or chippings as firewood to produce steam. The aim was to reduce the value the emission of air pollutants from stationary sources to a minimum. Biomass is a renewable energy source.
According to the functionality, boilers working on biomass do not fall behind oil heating systems, and by fuel consumption they represent significantly more cost-effective solution. With the construction of a new steam production plant, combustion of biomass is providing technological needs for energy heating from a plant that will use cheaper and more environmentally friendly fuel. Energy utilization of forest biomass can be considered CO2 neutral, which is its main environmental benefit compared to fossil fuels.

5.1.5.Retention of traditional technologies in the salt production

Case Study: Salt works Ston, Croatia

Salt works Ston in Croatia the same as Salt works in Ulcinj uses the traditional centuries-old technology of "salt harvest", which greatly depends on the meteorological conditions (days without rain) during the crystallization of salts in the basins. Despite the significant number of tourists who visit this Solana throughout the year and certain economic effects in this regard, one rainy summer can ruin a "salt harvest" and thus hamper or undermine the economic viability of the salt works. Similar situation is in Salt works Nin, also in Croatia.

5.2. **Applying lessons learned**

The analysis of cases in international practice led to the conclusions that can be applied to the development of eco-tourism in the area of the Solana, as well as for salt production:
1. Cinque Terre and Gura Portitei illustrate how the protection of the unique environmental values can be used as the biggest economic driver of sustainable tourism;
2. Project Grootbos shows the way in which quality ecotourism can be used for ensuring long-term economic and social benefits to the local population through providing jobs and training, proactive environmental management and projects to the benefit of local communities;
3. Gura Portitei shows how to apply, through public / private partnerships, integrative infrastructure programs in order to provide effective protection network against floods, and positive impact of eco-tourism in sensitive and vulnerable areas.

4. Salt works Pag indicates that the application of new, more environmentally friendly and cheaper technology improves and increases the production of salt and enables its sustainability.
5. Example of Salt works Ston says that weather conditions can very adversely affect the survival of salt works that rely only on traditional way of salt production.

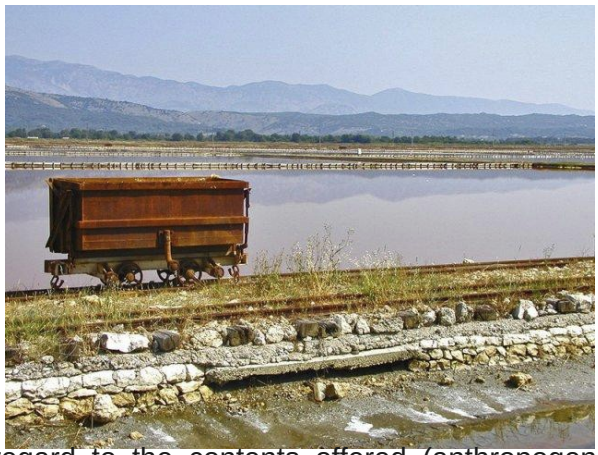
Applying these lessons and the creation of eco-friendly conditions in the developed spaces by using rigorous construction standards and strong spatial strategy, which helps protect buildings from the impacts of climate change, represents the concept of the organization, development and use of space of Ulcinj salt works for the development of salt production in a more sustainable way and the development of eco- tourism given further below.

6. CONCEPT OF ORGANIZATION, DEVELOPMENT AND USE OF SPACE OF ULCINJ SALT WORKS BASED ON ECO TOURISM PRINCIPLE

The proposed solution is based on high-value limited development of a smaller part of Ulcinj salt works which is located in the immediate vicinity of the channel Port Milena, which as a complementary activity supports the production of salt, but also other products and services in the wellness and beauty treatments, eco- tourism, mariculture, healthy food production, education and scientific- research activities, while at the same time it protects and enhances the significant ecological area in the Solana region.

Picture 3. Panoramic view to Solana Ulcinj

Picture 4. Solana basins and industrial railway



Ulcinj salt works and its surroundings, with regard to the contents offered (anthropogenic environment of the Solana, the natural bird reserve ideal for bird watching, a large number of cultural and historical monuments, traditional villages characteristic of this part of Montenegro, vicinity of the sea, vicinity of the mountains in the background, which gives ability to organize walks and mountain climbing, fishing, natural and healthy nutrition based on local agriculture, etc.), have great potential for development of tourism on the principle of ECO Lodge and ecotourism.

Ecotourism is environmentally responsible travel and visit to relatively conserved areas for enjoying the nature and associated cultural values - both from the past and present, while improving the protection of nature, a low visitor impact and beneficial active impact on the local population.

ECO Lodge represents the type of tourist accommodation that meets the following criteria:
- Protects the natural and cultural components of its environment,
- During the construction has low impact on the environment,
- Fits in the specific context of the environment,
- Uses alternative, sustainable means in water consumption

- provides careful handling of waste and waste waters,
- has excellent cooperation with the local population,
- applies programs of environmental education and raising awareness among employees and tourists,
- gives contribution to the sustainable development of local communities through research programs.

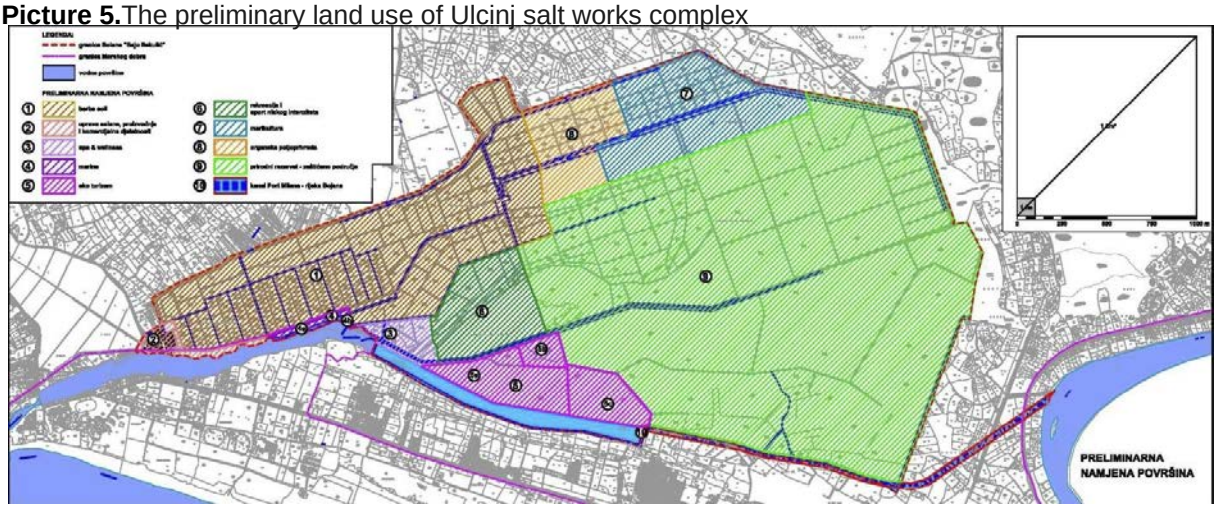
The area of Ulcinj salt works was declared to be the Emerald area of European Natura 2000 network, which requires sensitive treatment during valorization aimed at further development (construction and use) of the area. The area near the channel Porto Milena has great development potential, and it is the ideal location for ECO Lodge, as a type of ecotourism, which has the characteristic maximum integration with the natural environment: a southern and south-eastern orientation, high insolation, a good position in relation to considerable number of cultural-historical monuments of Ulcinj, more attractive traditional fishing structures (kalimere), an area important for birds (IBA), accessibility from the water surface, etc.

Due to the particular sensitivity and possible threats to the existing eco-system, in accordance with the provisions of the Regulation on the species, the minimum technical requirements and categorization of facility types, the plan is to build a special kind of tourist accommodation in this section. Eco resort, as a form of hotel accommodation, in Article 13 of this Regulation is defined as follows: "*Eco Villages integrate environmentally sustainable tourism activities with commercial tourism operations. Besides accommodation, we offer the local food and drinks."*

The planned tourist accommodation facilities are in high category 4*, 5*and 5+*.

Spatial concept involves planning the purpose of the areas and activities that can be deployed for the performance of certain economic and other activities on the principles of sustainable development. The planned contents should valorize the potential of the site without posing threat to the principle of protection of natural values and industrial architecture.

Picture 5. The preliminary land use of Ulcinj salt works complex



Source: MA Consulting analysis

In addition to the areas and plants for salt production ("salt harvesting" and industrial processing) that would in the future have an area of about 300 ha, other areas of the Solana are planned to deal with aquaculture on the area of about 100 ha, agricultural production (production of healthy food) on an area of about 55 ha. The area of about 60 ha would be the zone mainly intended for rest, recreation and sports. The area of approximately 70 ha would be engaged for the construction of tourist complexes (Eco lodge hotels and villas, *riverfront* villa and water bungalows - dwellings), and about 5 ha for the marina. The remaining area under Zoganjsko blato in an area of about 827 ha, with the exception of necessary interventions related to the

maintenance and protection of space, facilities for bird watching, will not suffer other interventions and should remain intact in the future.

Picture 6. Birds in Solana

Picture 7. Observing point- the tower

Picture 8. Observing point

The following would be provided in the area of Ulcinj salt works:

1. **Production of salt**

In the coming period, the plan is to continue producing salt in the traditional manner, but with the modernization of applied production technology. In this way it is possible to increase production by 25%, or in the worst case to keep the current level of about 20-25 thousand tons. Thus planned production requires about 300 ha, or approximately 20% of the territory that the Solana currently has.

Picture 9. „Salt harvest“

Picture 10. Salt transportation by industrial railway

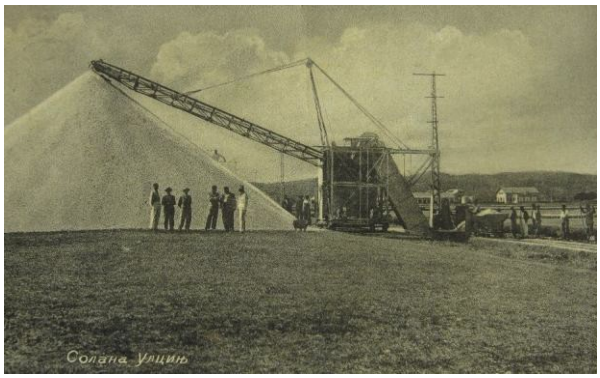
2. Management, production of salt and salt products, salt works Museum, birdwatching, research station, commercial buildings

It is necessary to reconstruct the existing and construct new production facilities, administration, storage facilities and plants, purchase new and modern equipment in accordance with standards for salt production for food and salt products - spices (ISO, HACCP, Halal, Kosher and others), salt products for spa & wellness, beauty and medical treatments. In this sense, it is necessary to have the appropriate department dealing with services research, development and products control.

Damaged in the earthquake in 1979, old and the first Solana Administration building situated within the salt works should be reconstructed to accommodate the existing Museum founded in 2007, which has exhibits on the production program of the salt works, the manner of its functioning, and natural science collection of specimens of flora and fauna from the salt works. An educational film about the salt works is being also presented. Samples of crystallized salt, documents, illustrations can be also presented and in the area in front of the Museum scrapped tools for harvesting and production of salt displayed. This building can also accommodate the existing gift shop where you can buy souvenirs - salt crystals, salt flower, refined, unrefined salt, brine, mud packs, hats, posters, etc. This facility has an ideal position and the conditions for the Info Centre with the service guide for sightseeing the salt works and ornithological area with observing points, towers and paths of different length offering great view to numerous bird

flocks.

Picture11. The first (old) Administrative building of Solana**Picture 12.**The beginning of worl of Solana



Research Station should be planned to be situated in the facility in which the experts, pupils and students can stay and work when studying natural and created values primarily those of the Solana.

Regarding commercial buildings it would be possible to build catering and commercial facilities.

Parking and garage are planned for tourists and visitors, who would continue to move through the Solana complex by environmentally friendly transport means: fully electric vehicles (tourist trains, golf carts, bicycles, boats), bicycles, horseback riding, hiking.

Areas with aforementioned facilities should be subject to quality landscaping design.

3. Spa & wellness, health tourism, mineral curative mud

The results of research showed that the samples of medical mud (peloids) contain high concentration of various minerals, organic substances as well as some antimicrobial features. Anaerobic conditions in the mud of salt basin have created large stocks of healing mud. Preliminary studies have shown its high quality, primarily for the treatment of arthritis and skin diseases, which represents a great potential for the development of spa & wellness and health tourism. There is already a part of a pool which was adapted into a pool with medical mud, where in the period June - September, the services of bathing in the peloide can be used.

Products of salt mixed with herbs, essential oils and other products primarily from its own assortment would be used in cosmetic, health and other treatments.

Facilities for spa & wellness and health services are also planned (swimming pools, steam baths, saunas, salt rooms, rooms for exercise, department for cosmetic and medical treatments), spa & wellness hotel, adequate quality landscape areas with the space for rest, meditation, recreation, etc.

4. Nautical tourism - mooring with commercial berths

On the south side of Solana's edge, there is 4.5 km long channel Port Milena, not in well order, which drains the surrounding land and drains the surplus water into the sea.

The applicable local and state planning documents (DSL) predict that a part of this channel will be put in order and marina constructed. In order to create conditions for smooth access of vessels, it is necessary to make certain interventions that would improve the situation in Porto Milena channel.

The most important is to ensure a constant exchange of water in the waters of moorings. In order to increase the amount of water in the channel Port Milena, it is necessary to build a system for partially translating water of the river Bojana in the channel Porto Milena. In this sense, from the

eastern part of Solana, namely from already existing channels to the Bojana River, it is necessary to build a channel and thus provide that the channel water are running throughout the year, which would certainly contribute to a large improvement of the water quality in channels i.e. the future moorings. It should be noted that nautical tourism facilities where freshwater mixes with saltwater are best suited for longer stay of yachts including winter harbors.

Since the planned moorings capacities are predicted in the edge salt works area, their construction would contribute to improving the economic potential while at the same time it would not affect the biodiversity of the salt works area.

A part of the current salt works channel situated immediately next to the channel Port Milena is planned for the waters of future moorings.

Mooring should be built as a combination of floating pontoons for mooring, while concrete piles over which the wooden planks waterfront is formed will be used for the quay wall. Mobility and flexibility of space would thus be provided.

Mooring is a building of coastal infrastructure along with tourist complexes and facilities, with pertaining aquatic and terrestrial space designed and equipped for the acceptance and safe mooring of vessels, performing simple port operations (loading and unloading of passengers and smaller quantities of cargo) and has direct pedestrian access to the vessel.

Mooring is a public, built part of the coast of smaller capacities

Picture 13. Example of pontoons for moorings

The space would require landscape design and setting up a jetty along the waters that would lead from the Solana Administration building to the end part of the tourist accommodation zone.

5. **Tourist accommodation**

In the southern part of the Solana, in the immediate environment of the channel Port Milena, the plan is to develop tourist accommodation on ecological principles. In the zone of average width of about 400 m, the necessary capacities would be built (hotels, villas, bungalows), ensuring compliance with all principles of Eco lodge in order to avoid disruption of the natural balance.

The area where tourist accommodation capacities could be built would have three sub-zones:
1. Eco Lodge Resort and hotels
2. Villas and riverfront villa
3. Dwellings and floating bungalows- Water bungalows

Picture 14. Examples of eco lodge resort, eco resort, villas






In these zones, the facilities are of very low level, embedded in the countryside greenery, while occupancy and construction indices are low. The planned density of use is low at 40 beds/ha. Environment of the facilities will be subject to landscaping with greenery, places for rest, recreation and sports.

Particularly attractive for tourists would be villas, riverfront villas and houses on stilts or floating bungalows settlement (water bungalows) as a kind of reminiscence of the traditional kalimeras

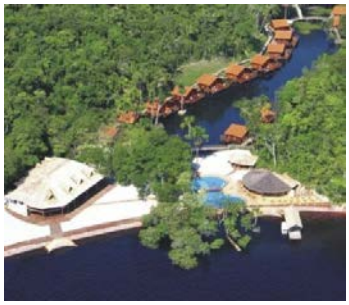
Picture 15. Examples of riverfront villas, houses on stilts and floating bungalows(water bungalows)










6. Recreation and Sports

This zone would include courts and facilities for rest, recreation and sport: football, tennis, indoor sports, separated paths for hiking, bike riding, horseback riding, horse farm with a horse racing track, and other sports and recreational activities of low intensity - which have little or negligible impact on the environment. Terrains and buildings would be incorporated into the landscape decorated spaces in accordance with the functions of individual sports and recreational activities, formed in a free and ecological style, with as many natural materials for paths and equipment.

Walking paths – the Solana complex already has "Educational path", 3.9 km long and its sightseeing would require at least three hours. The path starts from the Souvenir shop with the visit to Solana Museum (sightseeing the settings and watching a short film about the Ulcinj salt works). The path passes by crystallization basins where one exhibit basin is adapted enabling the visitors to see the way of traditional "salt harvest". At 1.7 km from the Museum is the first watchtower from which, during the summer months, it is possible to observe nesting of several birds species: terns, stilt and others. During the winter, the majority of wintering birds can be seen from this watchtower. The path further goes by the basin "Lake I" to the observation tower, with a view to the majority of salt pan basins. In addition to paths within this zone, it is desirable to build and mark paths for walking visitors in the entire area of Solana and organize the sites for a pause - rest (benches, shelters, litter bins, etc.) and observing the environment and birds (watchtower).

Picture 16. The existing „Educational path“ in Solana

Jogging path, power walking–similar to walking path, for amateurs who are running it is necessary to mark jogging paths in the nature, and special attention pay to the safety of paths and their attractiveness.

Bike paths–it is possible to visit the current “Educational path” by bicycle. Cycling as a movement is in expansion and the Solana area has excellent conditions for doing this activity in a unique, natural and manmade environment.

Horseback riding–vast area of Solana is an exceptional location for lovers of riding and it is recommended to establish an equestrian club with a stud farm .

7. Mariculture

Considering the planned modernization of the salt works production capacities and the use of a smaller number of basins for salt harvest it is recommended to change their purpose into shellfish and crab farms. In this way the basins that are not in use during the whole year would be filled with water to breed mussels and crabs as if they are in their natural habitat. In terms of extensive cultivation, they will live in a natural environment and feed on natural food, and possible additional food would be reduced to a minimum. With such a growing, proportion of invasive and environmentally unacceptable methods is the lowest.

Shellfish and crustaceans from the organic farming are characterized by less fat meat, but also the smaller size/weight than those from conventional and intensive farming. Tourism development would provide for the placement of the quantities produced in our own catering facilities and sale of any surplus in the immediate environment. In addition to investing in spawn and food for possibly minimum feeding, almost no additional initial investments are needed.

8. Agricultural production

In the part of the Solana complex, it is possible to organize agricultural production on the area of about 55 ha, both for own needs and for the market, which would, following the necessary certification, be based on the principles of organic production. Vegetables and fruits would be primarily produced, both outdoors and in greenhouses, which would result in higher yield due to the favorable climate and irrigation.

9. Reserve for birds and wetland

More than half of the area of Solana (about 56%) in addition to the required interventions related to the maintenance, restoration and protection of space, is planned for the construction of buildings (observation points) for birdwatching. This zone does not require any other interventions in the future it should remain in its current state.

Picture 17. Examples of observation points and towers -observation points







Picture 18. Comfort at observation points



This zone is basically intended for nesting, wintering, resting and feeding birds and other wildlife species, bird watching and the activities of scientists and researchers. Entry into this zone would be strictly controlled in accordance with the carrying capacity of the zone.

Ulcinj occupies an important place on the European map of bird lovers and ornithologists. In this area you can enjoy observing about 240 species of birds, which is half the species registered in Europe, including the very rare: pelicans, cormorants, long-legged Sandpiper, Flamingos and others.

In the region and beyond are habitats where the number of registered species is much higher, but what distincts Solana from all others is the quality of the species and their abundance. The number of almost 15 species that are using the basins for nesting, wintering or rest station during the fall or spring migration exceeds a threshold of 1% of the total world population.

At the Solana area of 15 km2 there is 3% of the total world population: Pelican (Pelecanus crispus), crushers (Limosa limosa) and spotted red shank (Tringa erythropus). At Solana, 55 species of birds nest which is almost half of the total number of breeding pairs of waterfowl in the region.

Results of the winter census of birds carried out at the Solana since 1999, indicate the presence of about 20,000 birds each year, regardless of whether the basins are filled with water or not. Out of salt production season, water is not desirable in basins due to erosion of the embankment due to wave action and it is pumped out from the salt works. In certain dry winters, birds concentrate on just a few pools and the scenes are amazing.

Spring at Solana brings exceptional experience because in spring time the Solana is a transit station for more than 40,000 birds a day. Early migrations bring large and dense flocks of ducks (Anas querquedula) that arrive in large number, even up to 1200 birds per hour. Her relative and also migrating bird, Teal (Anas crecca), joins deer flocks (Anas acuta) and widgeon (Anas penelope) that spend winter at Solana. Thousands of waders are also coming. Their flocks are smaller, but that does not diminish interest in their protection, because most of them have adverse protection status and their number is decreasing faster than the other groups of birds, primarily due to habitat loss.

Tens of thousands of swallows use the Solana as a resting place during their return from Africa.Tamarisk tree is small for these lively birds and they land and rest on the dikes. It happens that the entire dike becomes black of rural swallows (Hirundo rustica) and city swallows (Delichon urbica). Stonechat (Saxicola rubetra), Yellow Wagtail (Motacila flava), Flycatcher (Muscicapa striata) and Meadow Pipit (Anthus pratensis) come in flocks of 10,000 units per day.

In the fall, most of our nesting saves on the road to the south, and tired birds from Siberia and Northern Europe will enjoy during the winter in the Mediterranean rainy winter with little frost, but also experience hurricane and cold winds from the surrounding mountains.

10. Channel Bojana - Porto Milena (Part)

Some existing basins and channels in the southern part of the salt works are set to become a part of the channel of width of about 50m, which will connect the Bojana river and channel Port Milena. A part of the eastern end of the channel would be built on the land of the salt works, a part on the land of others owners.

Apart from providing sufficient quantities of fresh sweet water, the channel would be used for sports and recreational water activities (rowing, fishing, etc.), and also for raising a number of “kalimera’s” as a kind of symbol of Porto Milena and Ulcinj.

Certainly, the channel would have a very important function for traffic of nautical, tourist and pleasure boats, but also at high and very high water level of the river Bojana. Because of these functions it is essential that the depth of the channel is such that it can be used by boats (yachts and other boats) with deeper draft and that in hydrological maximums it can accept larger quantities of water from the river Bojana.

Table 4. Ulcinj salt works - zoning and indicators

Zone	Subzone	Purpose zone	(Activity) in the zone	Types of areas and facilities	areas	% of the total area	Oriental urban parameters				Oriental capacities					Approximate number of employees	Approximate total VALUE of investment EUR
							Type of object	Maximum occupancy index	Maximum construction index	Maximum number of floors	Under building	BRGP	Number of beds	Berths	Beds		
1		Salt works – basins	Salt harvest	Basins, dikes, channels, dams, facilities (pumps), transporter, industrial railway, roads, other infrastructure		287,86	19,52			P	1000	1000			100		200000000
2		Salt works –administration and production	Production of salt, salt based products, storing, administration, green and free areas, etc	Storing unprocessed salt and final salt based products, storing other products, Administration, shop, souvenir shop, laboratory and research, Salt Museum, visitor center, research station, catering etc, dikes, channels, dams, industrial railway, roads, other infrastructure, landscaping, garage for visitors		11,52	0,78		0,20	**0,50**	P+2	23034	57586				100	55000000
3		Spa & wellness	Cosmetic/medical treatment, medicinal mud therapy (peloid), swimming pools, hamams, fitness rooms, green and free areas	Spa & wellness facilities, recreation and sports terrains, dikes, dams, roads, other infrastructure landscaping,		16,19	1,10		0,10	**0,20**	P+1	16193	32385	300			270	22000000
4	4a	Marina	Marine facilities, mooring, water, electricity and fuel supply, catering, green and free areas etc	Marina (marina facilities and catering facilities – food and drinks), marina hotel, recreation and sports terrains, dikes, dams, channels, roads, pontoons, berths, other infrastructure, landscaping		2,74	0,19		0,20	**0,60**	P+2	5471	16414	300			270	48400000
	4b					2,02	0,14							150	900			5500000

Table 4. Ulcinj salt works- zoning and indicators

subzone	Purpose zone	(activity)in the zone	Types of areas and facilities	areas	% of the total area	Oriental urban parameters				Oriental capacities					Approximate number of employees	Approximate total VALUE of investment
						Type of object	Maximum occupancy index	Maximum construction index	Maximum number of floors	Under building	BRGP	Number of beds	Berths	beds		
5	5a	Tourism, catering, sports and recreation	High category facilities for tourist accommodation 4☐ and 5, catering facilities, sports and recreation terrains, (tennis, indoor sports, volley ball on sand etc) green and free areas,	Facilities (hotels, eco lodge resort, villas, catering facilities for food and drinks), sports and recreation terrains, dikes, channels, dams, roads, pontoons, other infrastructure, landscaping	36,99	2,51		0,17	0,34	P+1	62877	125754	2515			1509	414989777
	5b				24,70	1,67		0,15	0,30	P+1	37043	74085	1482			252	244481454
	5c				8,43	0,57		0,20	0,20	P	16870	16870	337			148	25949000
										P	3600	3600				288	5400000
6		Recreation and sports	Facilities and areas for recreation and sports intensity		62,24	4,22				P	10000	10000				60	12000000
7		Mariculture	Breeding of seashells, fish, crabs etc.	Facilities (pumps, storage etc),pools, dikes, channels, dams, roads, pontoons, cages for breeding, other infrastructure	103,04	6,99				P	200	200				20	15750000
8		Agriculture	Production of healthy food (vegetables and fruit)in open area and in greenhouses	Facilities (pumps, storage, greenhouses etc.) dikes, channels, dams, roads, other infrastructure	55,76	3,78				P	200	200				40	25200000
9		Reserve for birds and wetland	Area without significant interventions, preserved area and habitats – bird watching, controlled access of visitors, Research works	Facilities (pumps, observation points etc) dikes, channels, dams, roads, other infrastructure	827,04	56,08				P	300	300				20	1050000
10			Water sports, fishing, kalimere, green and free areas etc.	Facilities (kalimere), dikes, channels, dams, roads, pontoons, other infrastructure, landscaping	36,23	2,46				P	300	300					105000000
TOTAL					**1474,75**	**100,00**					**173488**	**335095**	**4934**	**150**	**900**	**3077**	**1180720231**

Source: MA Consulting analysis

6. ECONOMIC AND OTHER EFFECTS OF INVESTMENTS IN EXPANDING THE ACTIVITIES IN ULCINJ SALT WORKS

The basis of the presented evaluation is to obtain the reference initial economic parameters on the basis of which the general value of future investments will be determined at the level of the first evaluation that will be accurately determined and corrected through the study, planning and project documentation. Possible deviations from the values shown here are up to ± 20 %.

Estimated financial results

Estimate of income and expenses based on the use of accommodation with ancillary facilities (spa & wellness, mooring, bird watching, restaurants, sports terrains etc) is based on the estimate of the

number of nights during certain periods of the calendar year, based on accommodation facilities, accommodation prices in different types and categories, tourist consumption and average costs in the industry.

Luxury eco - resort with supporting facilities, located in the unique setting of Ulcinj salt works and the environment, will provide a very specific offer in our market and thereby attract the targeted categories of tourists.

This projection is based on the assumption that thanks to the quality marketing, tourism complex will be opened throughout the year and achieve nearly 100% occupancy in high season, 35-50% in low season and the rest of the period, or over 50% of the average annual occupancy.

As for the cost of accommodation and service in support facilities, which are planned, and based on which preliminary financial plan is based, it was assumed that prices will reach the level of developed destinations.

Direct (financial) revenues are:
A. One- off income:
1. Income from construction land fees
B. Income generated each year:
1. income from value added tax
2. Income from net profit tax
3. income from personal income tax
4. Income from property tax

A number of companies and entrepreneurs will certainly have direct income through the sale of products and services primarily in tourism and hospitality sector of Solana.

Income from fees for providing utilities on the construction land
Pursuant to the Law on Spatial Planning and construction of Facilities, Article 66, the investor is partially exempted from paying fees for providing utilities on the construction land.

Revenues from fees for providing utilities on the construction land will be possible to accurately determine only on the basis of the revised conceptual or major projects, i.e. accepted projects made in accordance with the urban- technical conditions and the Law and valid decision of the municipality of Ulcinj in that moment on the fee for providing utilities on the construction land.

The value of this fee could presently range even up 30,000,000€.

Income generated each year

Income from value-added tax (VAT) of the Solana tourist complex

It is assumed that in the first year of operations of the tourist part of the Solana complex, 25% of accommodation capacities and related contents will be in function.

Value added tax on the income from the renting tourist contents in the first year of the projection period (rate of 7%) is estimated at about 1,500,000€.

Value added tax on the income of catering and other supporting facilities in the first year of the projection period (rate 19%) is estimated at around 500,000€.

TOTAL VAT of Solana tourist complex (I year):	about 2.000.000 €

Income from net profit tax
Income from net profit tax is estimated at about 225,000€ .

Income from personal income tax
With construction of the planned contents, the number of employees would range about 1846 permanent and 1231 seasonal workers, which will contribute to the achievement of annual revenues from income taxes and surtaxes of around € 1.21 million.

Other income
In addition to the services of a luxury accommodation, sports and recreational facilities, spa & wellness center, sports, hiking, biking, bird watching, visit to the Museum Solana, it is possible to generate revenues by organizing trips in which tourists would get familiar with ethnic heritage of Ulcinj and Montenegro, olive growing, visits to national parks, cultural and religious facilities in the vicinity, carnivals, fish and wine festivals, rafting on Tara in summer, and skiing in winter.

Table 5. Recapitulation of evaluation of income from the planned activity expansion

Direct income	**Amount**
One off income:	
Income from fees for providing utilities on the construction land	30.000.000
Income generated each year:	
Income from value added tax	2.000.000
Income from net profit tax	225.000
Income from personal income taxes and surtaxes	1.210.000
TOTAL INCOME:	**33.435.000**

Izvor: MA Consulting analysis

Concluding Remarks
Based on this analysis, we can say that Solana location is suitable for the construction of Eco tourist complex of high-category with ancillary amenities.

With the realization of the planned solution, Montenegro and the municipality of Ulcinj primarily, would be richer by a slightly different form of tourist offer.

Based on the analysis of the proposed solution, it can be said that the project is economically acceptable for realization. In consideration of acceptability one should take into account the social aspects of the investment and general social benefit to the municipality of Ulcinj and the state, through creation of new jobs, incentives and possible activation of the local population to develop a whole range of supporting activities and services.

This project will require the recruitment of permanent and seasonal workers during the construction and reconstruction of buildings in the complex Solana. The largest part of the construction materials and other goods, as well as services for these purposes will be procured from local sources.

The largest part of the goods, services and workers needed for the functioning of the complex will be provided from local sources.

Additionally, the social contribution of the investment can be expressed through the benefits for local government and the state, as an increase in revenues and promotion of Ulcinj and Montenegro as a tourist destination.

7. **CONCLUSION**

The proposed concept of extended activities in the complex of Ulcinj salt works retains all previous activities in a sustainable scale, while supplementing them with new, compatible, economically and financially viable.

The proposed expansion of activities can also bring a range of direct financial benefits to the municipality of Ulcinj and the State through various fees, taxes, surcharges and levies, but also through the involvement of other sectors of the economy at the local and state level: agriculture, food production, trade and services.

The planned expansion of activities in the complex of Ulcinj salt works especially in the tourism sector and services is especially important because they are the labor-intensive, which means that they enable significant employment of different professions. There will be permanently employed workers, and in season temporarily and occasionally employed. In addition to the employment, the economic activity of salt works complex will generate new employment, especially at the local level in agriculture, food production, trade and services. Profit, both financial and social, will be generated during the construction, reconstruction and spatial development of Solana for the planned new activities.

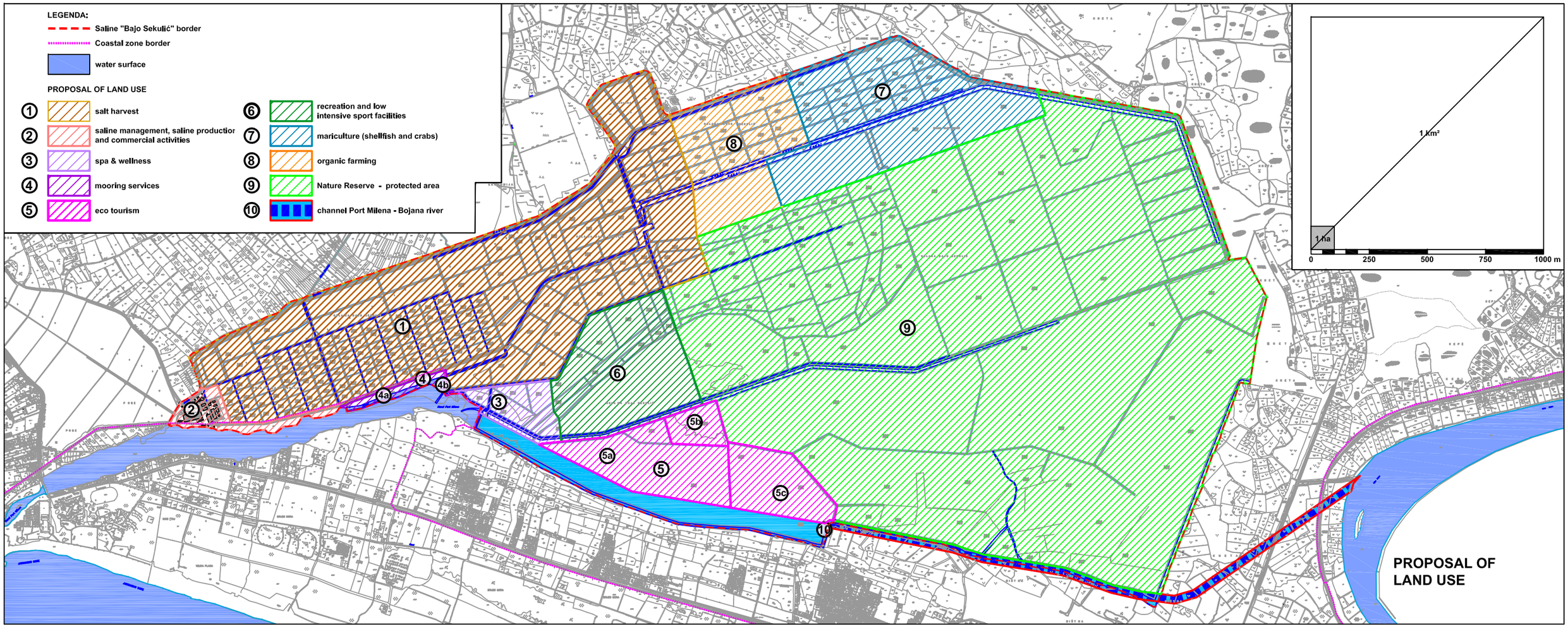
Gain of immediate and wider community is certainly the protection, maintenance, improvement and sustainable use of the salt works that foster nationally and internationally important and very valuable habitats of living world. The local and wider community of this area can have a number of benefits from environmental education of the population, visitors and tourists, and of scientific and technical research in this area.

Protection, maintenance, improvement and sustainable use of such areas requires certain financial resources. The current mono-structural economic activity (production of salt) in the current market conditions does not provide operating profitability, and therefore neither required funds for this purpose. One way of providing the necessary financial resources to this need is to expand economic activities in the complex of the salt works which would bring revenues from which would be partly funded the protection, maintenance, improvement and sustainable use of the complex Ulcinj salt works allocated for bird reserve.

The presented strategy from the planning and economic point indicates to the possibility of an integrated and sustainable functioning of different but compatible activities in the area of Ulcinj saltpans.

Literature and sources:

1. Prostorni plan Crne Gore 2020, Montenegroinženjering", Podgorica, IAUS Institut za arhitekturu i urbanizam Srbije, Beograd, Urbanistički inštitut Republike Slovenije, Ljubljana, 2008.
2. Državna studija lokacije - Rt Đeran, Port Milena (Sektor 65), CAU - Centar za arhitekturu i urbanizam, Podgorica, 2010.
3. PUP opštine Ulcinj - nacrt, ARUP, CAU - Centar za arhitekturu i urbanizam, Savills, Podgorica, 2014.
4. Elaborat: Solana "Bajo Sekulić" AD Ulcinj, Analiza postojećeg stanja i mogućnosti rentabilnog poslovanja, 2015.
5. Publikacija: „Solana Bajo Sekulić - Ulcinj, Mogućnosti održivog razvoja" (Skraćena verzija), 2012.
6. Pravilnik o vrstama, minimalno - tehničkim uslovima i kategorizaciji ugostiteljskih objekata, "Sl. list Crne Gore", br. 63/1, 47/12 i 8/15
7. Lješković Mitrović, S., Stamatović, S., Tadić, S., Adžić, N., Eco Lodge koncept u Crnoj Gori, Univerzitet Crne Gore, Arhitektonski fakultet, Podgorica, Ministarstvo za ekonomski razvoj, Ministarstvo turizma i zaštite životne sredine, Njemačka tehnička saradnja -GTZ, Podgorica, 2007.
8. Rutes, A. W., Penner, H. R., Adams, L., Hotel Design, Planning and Development, Architectural Press, Oxford, 2007.
9. Lawson, F.,Hotels& Resorts, Planning, Design and Refurbishment, Architectural Press, Oxford, 2006.
10. Hotel Build Cost Guide, Maximising Value, Leisure + Culture, AECOM
11. Hotel Investments Handbook - Chapters 8-15, HVS
12. Hotel Developments Costs 2009, Guideline for new hotel projects in Central and Eastern Europe, Audit - Tax - Advisory, Real estate, laisure and tourism practice CEE, Advisory, KPMG
13. Green Economy and Trade, Chapter 7 - Tourism, Trends, Challenges and Opportunities, United Nations Environment Programme, 2013.
14. Izvodi iz digitalnih planova K.o.: Ulcinj, Ulcinjsko polje, Donji Štoj, Gornji Štoj, Kolomza, Pistula, Zoganje, Darza, Reč, Sveti Đorđe, Uprava za nekretnine, Podgorica
15. Katastarski podaci za K.o.Ulcinjsko polje, Zoganje, Uprava za nekretnine, Podgorica, mart, 2015.
16. TK25, listovi: 170-1-2 Ulcinj, 170-2-1 Šasko jezero, 170-2-2 Fraskanjel, Uprava za nekretnine, 2009.
17. ODK 5000, listovi: 6K1-17 Ulcinj-17, 6K1-18 Ulcinj-18, 6K1-19 Ulcinj-19, 6K1-20 Ulcinj-20, 6K1-27 Ulcinj-27, 6K1-28 Ulcinj-28, 6K1-29 Ulcinj-29, 6K1-30 Ulcinj-30, Republička geodetska uprava SR Crne Gore, 1980.
18. Satelitski snimci, Google Earth
19. Satelitski snimci, Google Earth Pro
20. www.nekretnine.co.me/me/katastarski_podaci.asp
21. www.solana-ulcinj.me
22. http://www.euronatur.org/Bojana.bojana0.0.html
23. http://www.euronatur.org/Euronatur_-_European_Nature_Heri.english.0.html
24. http://www.birdwatchingmn.org
25. http://www.euronatur.org/Publications.411.0.html
26. http://www.euronatur.org/uploads/media/Chapt_1-3_Rapid_assessment_of_the_Ecological_Value_of_the_Bojana-Buna_Delta_01.pdf
27. http://www.webcgteam.com/tekstovi/vodic_za%20obalne_mocvare_cg.pdf
28. http://www.cvitsoli.hr/index.php/kolumna/19-ogledni-primjer-dobivanja-toplinske-energije-nastale-sagorjevanjem-drvne-biomase-u-prehrambenoj-industriji
29. http://www.agroklub.com/eko-proizvodnja/eko-sol-iz-stonske-solane-izvorni-hr-brand/15858/


LEGENDA:
Saline "Bajo Sekulić" border
Coastal zone border
water surface
PROPOSAL OF LAND USE
1 salt harvest
2 saline management, saline productior and commercial activities
3 spa & wellness
4 mooring services
5 eco tourism
6 recreation and low intensive sport facilities
7 mariculture (shellfish and crabs)
8 organic farming
9 Nature Reserve - protected area
10 channel Port Milena - Bojana river
1 km²
1 ha
0
250
500
750
1000 m
PROPOSAL OF LAND USE