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DESIGNING BASELINES FOR DEVELOPING AN INTEGRATED COASTAL ZONE MANAGEMENT SYSTEM IN THE ADRIATIC: EXPERIENCE IN SLOVENIA

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Structured abstract

Upon joining the EU, Slovenia has launched joint regulatory measures concerning spatial management. This also includes the recently adopted Integrated Coastal Zone Management Protocol (ICZM, 2008) that introduces a form of integrated management. In this framework Slovenia started to draw-up the appropriate starting-points to effectively incorporate the Protocol into the existing legislation and practice. This paper outlines the findings of the study directed at recognising the existing system and defining the starting points to develop an integrated management system.

Using descriptive and experimental methods, we simulated the drawing-up process of the Municipal Detailed Spatial Plan (OPPN) for spatial activities in the Strunjan Bay coastal zone. The simulation included three stages: spatial situation assessment, recognition of problem situations and its reasons, and definition of necessary systematic amendments.

We conclude that the existing system in Slovenia is hindered by the strictly separate jurisdictions for the marine part and terrestrial part, and the established methodological practice focusing purely on producing spatial planning documents for land. The aquatic land management system is based on a partial granting of concession rights for using water land and is, in reality, non-comparable to the land management system. To bring about “integration” we should find a new approach that would increase the range of participating stakeholders, starting points, and the methodological treatment manner.

This study was conducted under SHAPE[2] project; it is among the first of its kind in Slovenia. Its results are intended to be used by local and national institutions responsible for coastal zone management.

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[2] Shaping an Holistic Approach to Protect the Adriatic Environment between coast and sea (2011–2014), http://www.shape-ipaproject.eu/

1. Introduction

In the past, many conventions and strategies were adopted for the Adriatic Coast region under the auspices of various international institutions[3], leading to many detailed spatial protection and development projects (such as UNEP (1972), MAP (1975), Barcelona Convention (1976), MSDD (2005), CAMP (1989), PLAN COAST (2006), COASTANCE (2009), etc.).[4] They mostly focused on introducing the sustainable development doctrine to provide a synergy between developmental interests and goals for protection in the sensitive coastal region[5]. Their content was (gradually and with various results) included in the national legislation of individual countries, particularly at the strategic level and, to a lesser extent, implemented at the lower, i.e. implementing level, or in relevant spatial planning documents[6].

The Slovenian Adriatic Coast (approximately 46 km) is a complex ecological, economic, and social environment. Due to the long-standing extensive urbanisation, restrictive protection regimes, and an unclear planning system, the possibilities for efficiently regulating developments in the area had become more and more complex (Gabrijelčič, 2007). Based on the Integrated Coastal Zone Management Protocol (ICZM Protocol, 2008) and the timetable for introducing marine spatial planning, in recent years in Slovenia the bases for setting-up a system of integrated management of aquatic and terrestrial areas have been drawn at various levels (Analiza praks ICZM v Sloveniji, 2012). The system should upgrade the existing selective land use planning for land and sea and ensure the necessary procedural coordination of drawing-up implementing spatial planning documents (hereinafter: PIAs) for coastal zone developments.

European countries have differing experience in the management of the marine environment, aquatic areas, and waterside areas. In the case of integrated management development, this is a relatively novel field, so there are relatively few references and a small number of examples of good practice. In developing the terrestrial part of the coastal zone, in general, conventional methodologies are still used that also apply to terrestrial areas. However, in planning the use of marine land, spatial planning experts face relatively new challenges (Maes, 2008). The increasing pressures to various marine environment potentials open many questions and discussions regarding the competences in the exploitation of natural resources, ecological risk, logistics, and other accompanying effects, i.e. general problems of urbanisation that are also well-recognised on land[7]. In this sense, in the last 15 years marine spatial planning[8] (Peel, Lloyd, 2004) started to evolve intensively, in order to establish appropriate starting points and

[3] United Nations, European Commission, International Union for Conservation of Nature and Natural Resources, etc.

[4] UNEP – United Nations Environment Programme, MAP – Mediterranean Action Plan; MSDD – Mediterranean Strategy for Sustainable Development, CAMP – Coastal Area Management Programme, Plan Coast – COASTANCE – Regional action strategies for coastal zone adaptation to climate change.

[5] E.g., Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe

[6] In Slovenia these include: SPRS – Spatial Development Strategy of Slovenia (Official Gazette of the RS. No. 76/2004, 2004) and ZPNačrt – Spatial Planning Act (Official Gazette of the RS. No. 33/2007, 2007)

[7] The urbanisation problems that particularly stand out are: a) various environmental impacts (heat, chemical, sound, light, etc., emissions), b) increasingly difficult systemic and administrative manageability of the spatial situation (coordination and regulation of development interests, efficient spatial policy implementation, inclusion of the public in spatial planning, etc.), and c) sustainable use and natural resources management.

[8] Marine spatial planning is developed under various conventions; two of the most important ones are the United Nations Convention on the Law of the Sea, and the Convention on Biological Diversity (Maes, 2008).

methodologies to regulate aquatic areas and the wider marine environment context. The North Sea Coastal Zone countries (such as Belgium, The Netherlands, Germany) are very successful in developing spatial planning models and implementing these models in the national legislation (Douvere and Ehler, 2009), while the Adriatic countries (such as Italy, Slovenia, Croatia, Montenegro) started to develop this field of planning mostly in the project PlanCoast (Schultz Zehden et al., 2008) (next to the Adriatic region, the project also included the Baltic and Black Sea regions). Experts point out that developing marine spatial planning can draw on experiences in terrestrial land use planning (Gilliland and Laffoley, 2008; Tyldesley and Hunt, 2003), while the marine ecosystem parameters, protected by many national and international documents, should be considered as the fundamental basis (Maes, 2008).

SHAPE[9] was initiated in 2011 in the context of the sea–land dichotomy in the Adriatic region, focusing precisely on the development of a harmonised spatial planning where terrestrial and marine areas meet. The lead partner was Italy, which prospers in the Adriatic with the most coast and many pilot projects. As part of this, Slovenian partners produced a pilot project for spatial developments in the Strunjan Landscape Park, which experimentally included the production of a detailed plan for a fishing port in order to assess the feasibility of the ICZM Protocol in existing legislation and practice. Croatia as the second largest country of the Adriatic Basin headed the segment “Coastal Zone Management”; moreover, under the COASTANCE project (Marković and Škaričić, 2011) Croatia developed specific guidelines for integrated management development. The Croatian approach under COASTANCE is based on the analytical interpretation of the content and goals of UNEP and MAP in relation to those in the existing national spatial planning documents and, via pilot projects, it provides guidance for their realisation (Marković and Škaričić, 2011).

Among EU countries, the field of spatial planning and urban design varies widely; therefore the authors assume that in the case of integrated management as an “instrument of spatial regulation” its success will basically depend on the national approach and efficiency of its practical implementation.

1.1 Slovenian coastline

Natural amenities at the contact of aquatic and terrestrial areas have a huge economic potential. Along with the traditional activities connected to the marine environment, in Slovenia, there is intensive development of market-stimulated programmes intended for a wide range of users practically throughout the entire coastal zone. The consequence of this trend is reflected in spatial planning and urban design, which are increasingly subjected to partial development interests and design of a business environment with a distinct spatial infrastructure. Its realisation is often in conflict with administrative protection policy and other, non-commercial needs. The authors of the recently produced spatial plan for expanding Luka Koper (The Port of

[9] 13 partners from both Adriatic Coasts were involved in the project (Italy, Slovenia, Croatia, Albania, Bosnia and Herzegovina, and Montenegro). The project aimed to set up a multilevel and cross-sector governance system of coastal areas, focused on the rational use of the environment and the ability to solve conflicts among different uses. The project was funded by the IPA Adriatic Programme.

Koper)[10] (Venturi and Ažman Momirski, 2009), as one of the major ports in the Northern Adriatic, also pointed to the complexity of the actual planning in the coastal zone, "… at a time of social and economic change ports will also redefine their spatial strategies and relationships in space. Until now, they had only existed as a "foreign body" in space, often due to their customs status and concentration of technologies incompatible with a good quality urban life. (...) Areas that overlap or edges between the city and the port, or landscape and the port, become the key points of recognising modern urban concepts (...)" (Ažman Momirski, 2015: 29).

Even before the introduction of integrated management, spatial planning and urban design in the Slovenian coastal zone was characterised by various professional studies providing the starting points (Turk, 1999), developmental goals (Gosar and Banovec, 1999), and methodologies (Gabrijelčič et al., 2004) for setting-up an efficient spatial regulation system. These studies were often conducted in a broader spatial context or in cooperation with Italy and Croatia, which enjoy the largest share of the Adriatic Sea. Among the previous projects, which gave some key thematic and methodological starting points for integrated management, the following three are significant:

- 1) Project CAMP 2004–2006 (Gabrijelčič et al., 2004) where the authors under the pilot project "Detailed Design of Spatial Arrangements of the Coastal Zone" analysed the entire coastline and divided it into five types of spatial sequences according to the level of urbanisation (from the natural to the fully urbanised sequence, with an emphasis on the programmatic and visual components), while for each type detailed project guidelines were determined. Moreover, they found that the existing spatial situation is a consequence of obsolete planning documents and uncoordinated interests regarding terrestrial and aquatic areas. They stressed the need to develop a more efficient system of mutually beneficial spatial planning and urban design;
- 2) the international workshop "Izola East" where, using good practice examples from abroad, the authors tested the spatial options of the area through a range of solutions to suburban coastal arrangement and implementation of the current sustainable planning principles in the coastal zone (with a focus on design principles in coastal zone management (Ažman Momirski, 2013).
- 3) Marine Environment Management Plan (NUMO – in course of preparation since 2008)[11], where the authors find that aquatic land use increases from year to year (Gosar et al., 2011). In this sense, an analytical methodology for monitoring the conditions at sea (monitoring)[12] already exists, while for the terrestrial part there are several unknowns precisely because of the lack of an integrated spatial management system (Peterlin et al., 2013).

[10] The Port of Koper is the largest multimodal platform in Slovenia. The town of Koper is situated on the northern Adriatic Coast, i.e. on the eastern coast of the Gulf of Trieste. With 23,700 inhabitants it is the largest town on the Slovenian coast, or the sixth largest town in Slovenia. The Port of Koper's maritime throughput stood at 20.7 million tons of goods in 2015; it is the second largest port in the Northern Adriatic, second only to the Port of Trieste. (ANNUAL REPORT LUKA KOPER 2015, https://luka-kp.si/slo/poslovna-porocila).

[11] NUMO, see: http://www.izvrs.si/upravljanje-morskega-okolja/

[12] Pursuant to the Water Act, the Environmental Protection Act and various statutory instruments, monitoring programmes allowing for coherent and comprehensive overview of water status in individual river basin districts have been established in Slovenia. These monitoring programmes include: a) monitoring of chemical and ecological status and ecological potential of surface water, including the flow volume and level necessary for the assessment thereof; b) monitoring of chemical status and volume of groundwater; c) monitoring of water status in areas with specific requirements. Bilateral monitoring with the neighbouring countries, i.e. Italy and Croatia, respectively, is set-up at border water bodies. Some measuring sites are included in monitoring under international conventions (e.g. in the framework of the Barcelona Convention). (ARSO, 2015)

All three projects point to the planning and design dichotomy in managing terrestrial and aquatic areas. In the current administrative system, the state is the authority competent to deal with aquatic land, while municipalities are competent to deal with terrestrial land. This separate jurisdiction is both a formal/legal and methodological obstacle for planning spatial developments since most programmes at sea (mariculture, bathing water, waterways, etc.) and on land (fishing and nautical infrastructure, beach developments, sport and recreation facilities, etc.) are either indirectly or directly interconnected (logistically, programmatically, visually, etc.).

Regarding an integrated planning model, there are concerns both within the profession and competent institutions that, similarly to implementing some other development and regulating doctrines, the basic idea will be tailored to the level of its efficient implementation at the implementing level (Čok, 2016).

2. The problem and a hypothesis

In Slovenia, the systemic problem of coastal zone planning is particularly reflected in attractive and environmentally sensitive locations, such as the Strunjan Bay, the Municipality of Piran (hereinafter: OP)[13]. Despite the restrictive protection regimes, certain programmes and spatial solutions could also be implemented here, under certain conditions. Due to unresolved circumstances, it is precisely here that the regulating conditions are rather indeterminate, stimulating illegal usurpation of land and, as a result, general material and visual spatial degradation. The consequences of the existing situation are reflected in the uncontrolled erosion of shores, the siltation of waterways, visual and light degradation of public areas: "The term Light Degraded Urban Ambience designates a special spatial level within the architecture where improper lighting deteriorates otherwise quality segment of an architectural ambience…" (Novljan, 2013: 385), and general under-utilisation of spatial potentials for activities related to the marine environment (fishing, mariculture, beaches, etc.). Therefore, two research questions were put forward:

1. Why is the spatial situation improperly addressed, despite the known spatial, developmental and protection goals, existing spatial plan, political will, known land ownership, and the presence of potential investors?
2. Why are the existing urban and architectural parameters in planning developments not implemented in the process of PIAs, despite the many adopted umbrella guidelines at the strategic level (sustainable development principles, coastal zone management policy, etc.)?

The root cause is that in the existing partial systems for terrestrial and marine areas there is no efficient methodology for the coordination of various interests in space, and for recognising and establishing the necessary synergy. At the contact of land and the marine environment they are limited to individual analytical and procedural steps.

[13] The Municipality of Piran is touristically the most developed of all Slovenian coastal municipalities (next to Ankaran, Koper, and Izola). It is situated in the SW-most part of Slovenia. On land, it borders Croatia, and at sea, it borders Croatia and Italy. A significant part of the municipality belongs to the coastal zone. It comprises a surface area of 46.6 km2 and has a population of 16,758 (http://www.piran.si/).

2.1 Methodology and materials

The "coastal zone integrated management" system is a broad term, where the implementation of concrete goals and guidelines of management at the implementing level is of key concern. In the framework of SHAPE, we developed a pilot project "Design Concept for Landscape/Urbanism Arrangement of the Strunjan Area and Conceptual Solutions to Selected Spatial Arrangements" (Čok et al., 2014) to simulate the planning of spatial developments in the coastal zone at the level of OPPN and PGD[14] using the standard methodology and practice[15], as prescribed by existing legislation (Table 1). Basically, this is an experimental method designed to:

- recognise the shortcomings of the existing planning system, resulting in ineffective spatial regulations in the narrow coastal zone,
- produce guidelines for upgrading the existing system, which will play a key role in developing and implementing integrated management in spatial development.

In the process, the focus was on the interpretation and implementation of the content of Articles 9 and 14 of the ICZM Protocol[16]. Along with the experimental method, a descriptive research method was used in the individual phases, as well as semi-structured interviews with pre-prepared questions.

Table 1. **Municipal detailed spatial plan (OPPN) procedure simulation; I. definition of starting points (left column), II. formal OPPN content (right column) and extent and manner of their implementation in the simulation**

I. Definition of starting points (preliminary stage, various practices)		**II. Content of the act**	
Informal actions (individual approach of the PIA (implementing spatial planning document) producer)	**Implementation in a simulation** (Y – implemented, N – not implemented, O – other)	**Formal content of OPPN (graphical part)**	**Implementation in a simulation** (Y – implemented, N – not implemented, O – other)
- compilation and analysis of existing spatial planning documents, evidence base and other reference materials (for terrestrial and aquatic parts)	Y	1. architectural, landscape and design solutions of spatial developments	Y
		2. land subdivision plan	Y
- compilation and analysis of existing development initiatives in the area	Y	3. milestones of spatial development implementation	Y
		4. solutions and measures in support of integrated cultural heritage conservation	Y
- analysis of conformity of spatial planning documents and spatial implementations	Y	5. solutions and measures in support of environmental protection, protection of natural resources, and nature conservation	Y
		6. solutions and measures for protection against natural and other disasters, including protection against fires	O (in principle)

[14] Municipal Detailed Spatial Plan (OPPN), Project for Acquiring a Building Permit (PGD).

[15] Rules on the Content, Format and Drawing-up of Municipal Detailed Spatial Plan (Official Gazette of the RS. No. 99/2007, 2007)

[16] Article 9 lays down the planning of economic activities in the coastal zone, while Article 14 lays down the participation of stakeholders in the spatial planning and urban design process.

- coordination of development interests and protection schemes (constructive trade-offs)	Y	7. conditions of connecting structures to public infrastructure works and built public assets	O (in principle)
		8. impacts on, and connections to, adjacent spatial planning units	Y
- field work, consultations, and interviews	Y	9. allowance for variations from the planned solutions	N

Source: author (2015)

The simulation[17] (Table 2) was carried out in the period March 2013–February 2014 for the area of the coastal section in a length of 700 m in the crown area of the Strunjan Bay. Physically, this is a marine area in a 400 m range and a land area at a 100 m range from the water line. This site is characterised by intensive uses, various protection regimes, two separate planning and design systems and, consequently, many conflicts between various interest groups in the narrow coastal zone. It was implemented in three stages[18]. The first, analytical, stage aimed at evaluating the conditions in space, which consisted of a spatial and programmatic analysis. The second stage aimed at recognising problem situations and the reasons behind them. The third, applied, stage aimed at producing potential spatial solutions and, as a result, systemic modifications (in spatial planning) towards the development of integrated management.

During October 2014 and January 2016 the development was already partially put in place (after the completion of simulations for area No. 4, actual implementation documentation for a fishing port was produced).

Table 2. **Simulation of the OPPN procedure; formal steps, extent and manner of their implementation during the simulation**

Steps of drawing-up and adopting OPPN (formal procedure)	**Implementation in a simulation** (Y – implemented, N – not implemented, O – other)
1 Decision initiating the drawing-up of OPPN	Y (the provision of information to the public and interest groups regarding the initiation of the SHAPE project)
2 Publication of the Decision in the official bulletin	
3 Drawing-up of OPPN draft	Y (to a simplified extent)
4 Call to responsible spatial planning institutions for provision of guidelines	O (summary of comparable guidelines)
5 Analysis of guidelines, production of evidence base, and OPPN draft amendments	Y
6 Public announcement of submission to public display and public consultation of the amended OPPN draft	Y
7 Public display and public consultation of the amended OPPN draft, including the recording of all written comments	Y (simulation of the public display of spatial solutions as a public forum)
8 Preparation of views on the comments and proposals from the public display and consultation	Y (to a simplified extent)
9 First reading at the OS (Municipal Council)	N
10 Announcement of views on the comments in a (locally) conventional way, written notice to landowners in the OPPN area	Y (coordination with interest groups)
11 Drafting of the OPPN proposal based on the views on the comments and public proposals	Y (spatial solutions at the concept design stage)

[17] The simulation of an adapted OPPN procedure to identify any systemic deficiencies.
[18] The stages were adapted to the basic steps of OPPN production.

12 Provision of opinions on the amended OPPN proposal and positions of the competent ministries regarding the OPPN acceptability, for the case of CPVO (integrated environmental impact assessment)	N (coordination with municipality representatives and those responsible for spatial planning)
13 Production of a coordinated OPPN proposal	O (spatial solutions at the concept design stage)
14 Second reading and adoption of the Decree at the OS	N
15 Publication of the Decree in the official bulletin	O (public presentation of results)

Source: author (2015)

First stage

In *the first step* the existing spatial planning documents, protection regimes, and guidelines of spatial developers were analysed. Using the descriptive method we produced a range of:
(1) spatial potentials arising from OP's development strategy,
(2) spatial restrictions originating in the existing protection regimes, and
(3) initiatives of the residents who applied for the realisation of their development interests during the drawing-up of OP's Spatial Plan (between 2004 and 2014).

As part of the OPPN simulation we organised the first public forum, to which a broad range of participants was invited (8 interest groups)[19].

In *the second step*, the territorial conditions were evaluated based on field work. For the individual land plots, the following was determined:
(1) consistency of the existing and zoned land use (using a comparative analysis of the situation on the ground, and the cartographic groundwork of OP's spatial plan; in the analysis graphical tables were used where, based on the cadastral plan, the level of conformity, ranging from 1 to 5, was determined for each land plot),
(2) carrying out the implementation plans (situation in terms of external areas and structures; using comparative analysis of the situation on the ground, and existing PIAs, graphical sheets were used indicating the level of conformity from 0 to 1).

Second stage

In the second stage we brought together our partial findings. Intermediate results showed that, in fact, only by implementing the individual steps of the established planning methods, based on public records' data and the actual situation on the ground, it was not possible to recognise the true "dynamics of interests" in space and the synergistic effects triggered by the activities at the contact of marine and terrestrial areas.

In the next step, the situation's analysis was expanded to individual consultations. Using semi-structured interviews we obtained data on the needs and scope of the activities in the study area and the information on the reasons underlying the existing problem situations. The interviews using pre-determined questions consisted of the following thematic parts:
1: status of spatial users (concessionaires, inhabitants, visitors, managers, etc.)
2: interests and motivations (business activity, housing, sports, tourism, etc.)
3: needs (for open spaces, buildings, access to the sea, access to land, etc.)

[19] Representatives of the local community, municipality, and landscape park, and those responsible for spatial planning, tourism, economy, sports, the fishing industry, and mariculture.

4: conflicts with other users (conflicts in performing activities, restrictions due to protection regimes, etc.)

Based on a synthesis of the information we defined the interest groups and their common characteristics.

Third stage

In the third stage, we experimentally produced the Design Concept of detailed spatial developments.

In the first part (up to designing the design concept) the simulation consistently followed the formal procedure, as set out in the Rules on the Content, Format and Drawing-up of Municipal Detailed Spatial Plan, while in the second part it was shortened in the segments concerning the acquisition of final opinions and the presentation at a Municipal Council meeting. On the basis of a synthesis of all results, we proposed the starting points for developing the integrated management model.

3. Results

3.1 Assessment of the situation; activities allowed and restrictions under protection regimes (1st stage)

By comparing the allowed activities, as determined by zoned land use in the spatial plan and protection restrictions, we found the following:
- in the terrestrial part there are 8 categories of zoned land use and 5 protection regimes[20],
- at sea, the use is governed by 11 legal regimes[21], which define the “manner of enjoyment” of a certain right and obligations in the individual parts of the sea. At sea, there are also 5 protection regimes.
- by using a precise digital comparison of concession areas for the use of aquatic land, water permits, and cadastre we identified four conflicting discrepancies that are due to the indeterminate regulating system (overlapping of concession areas, waterways and landing piers, and non-harmonised delineations of the zoned use of terrestrial and aquatic areas).

We found that in the sense of spatial management the following jurisdictions are strictly separated:
- zoned land use and the manner of spatial management of terrestrial land to the water line are mostly under municipal jurisdiction, while the use of aquatic land (cadastral municipality k.o. Morje) is under state jurisdiction. Competent institutions issue selective consents for each development, which makes integrated planning and design even more difficult. This shows that

[20] Protection regimes in the terrestrial part are the following: cultural heritage, natural assets, Natura 2000, ecologically important areas, protected areas.
[21] Legal regimes governing the use of the sea and obligations at sea: bathing waters, bathing sites without the water permit, bathing sites with water permit, bathing areas, natural beaches, impact areas of bathing water, fishing reserves, mussel growing sites, foraging areas, mussel growing areas with concession, ports.

there are two completely separate systems for planning marine land use (in the form of concessions) and the developments on land. Formally, these two systems do not need to consider the potential synergistic effects triggered by the use of aquatic and terrestrial areas in the broad sense (e.g., when granting concession rights for the mussel growing site the need for technological surfaces on land was not considered; when granting concession rights for a bathing area the transport and logistics supply was not considered, etc.).

After conducting a detailed inspection of all conditions and bases we found that also under restrictive protection regimes certain spatial developments can be carried out to improve the existing situation and provide the necessary spatial conditions for the co-existence of interest industries (mariculture, fishing industry, tourism). The existing problem situations in space are mostly the result of non-harmonised interpretations of these policies and inadequate practice (the competent services carry out only the formally laid down obligations).

By reviewing the incentives for narrow and broad study areas, we wanted to investigate the interests of inhabitants in space. We found that despite the well-recognised pressures on the narrow coastal zone, in the period from 2005 to 2014 no formal incentive was filed at the municipality. In this respect we feel that the existing unregulated situation is either the result of ignorance or the lack of interest in solving the situation.

The first public forum was attended by 60% of those invited. These were mostly people who were there ex officio and individuals who were, as landowners or renters, directly included in the study area. Their response showed that such an approach could not help us identify all the tendencies and problems in space.

In analysing the conformity between the zoned and actual land use, and realisation of implementation plans, the following conclusions were made:
- the discrepancies are mostly the consequence of selective land use planning at sea and on land; terrestrial areas were uncontrollably usurped by fishermen and mariculture operators (the mussel growing site) who need technological areas and storage facilities for equipment and vessels for their activity (in the present system, the concession granted for fishing and mariculture does not define the conditions for regulating the technological part of the activities on land (therefore, PIAs were not produced),
- in granting the concession for bathing areas the conditions for managing the terrestrial part and the necessary logistic infrastructure were not specified, therefore PIAs were not produced,
- in defining the dimensions of the mussel growing site and its location in the marine area, the parameters regarding sea routes' regimes and the status of landing piers were not considered (problems of partial planning),
- the entire area is regulated by two PIAs only. The first one is a town-planning scheme regulating a smaller part of the area, which was, for unexplained reasons, never implemented, while the rest of land is governed by general, unclear spatial management conditions (PUP) specifying that, practically, partial spatial documentation is produced for each spatial development.

3.2 Problematic situations as the result of uncoordinated land use on land and at sea (2nd stage)

Based on the interviews we found that there are 12 interest groups gravitating towards the study area. These are: 1. concession holders for fishing (fishermen); 2. concession holders for mariculture (mussel farming); 3. holders of rights to municipal mooring; 4. concession holders for bathing areas; 5. inhabitants; 6. the food service industry; 7. beach visitors; 8. organisers and visitors at local events in the area along the hotel compound; 9. landscape park employees and visitors; 10. salt pan employees; 11. transitional visitors or "visitors to the Lungomare trail" between Piran and Koper, and other visitors; 12. municipal services, intervention, and security. The following conclusions were drawn:
- their daily and seasonal presence in the area turns the sea into a spatial phenomenon or activities connected to the marine environment;
- practically everyone, within their interests, has the needs for a specific built structure (large or small structures, piers, jetties, moorings), the development of external areas, accompanying infrastructure, and access, while they all gravitate towards practically only 600 m of coastline;
- the existing methodology of public inclusion in the planning and design process in the case of such a complex situation, where some spatial user groups are located much further inland, does not have the desired impact, so their needs and interests are not properly addressed in the conventional system of identifying the bases and other inputs for planning of spatial developments;
- planning of concrete spatial solutions is not possible without prior co-ordination. Many compromises are necessary, but previous practice failed to reach them in producing spatial planning documents.

Problems arise due to the multitude of interests, restrictive protection regimes, and also the poorly undetermined coastal zone management system (Figure 1).

Figure 1. **The basic reasons of the existing "problem situations" and the resulting spatial conflicts**

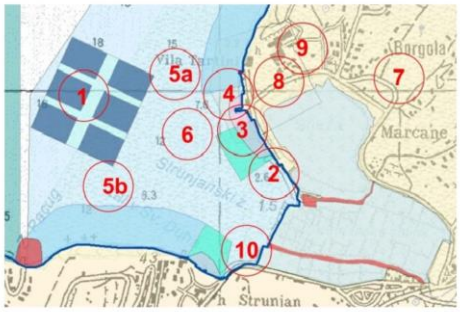
A ↓ **VARIOUS INTERESTS AND LIMITED SPATIAL OPTIONS**	**B** ↓ **VARIOUS AND RESTRICTIVE PROTECTION REGIMES ADVANTAGES AND/OR DISADVANTAGES**	**C** ↓ **DISCREPANCIES IN LAND USE PLANNING ON LAND AND AT SEA**
→ spatial restrictions on land and at sea → many interests within a limited space (bottlenecks) → mutually exclusive **→ CONFLICT OF PROGRAMMES** **→ CONFLICT OF ACCESS** **→ ECOLOGICAL CONFLICT**	→ in the programmatic and spatial sense, the regimes restrict, in practice, all the existing activities and tendencies of the individual sectors → all processes must adapt to specific constraints **→ CONFLICT OF DEVELOPMENT POTENTIAL** **→ OPPORTUNITY TO PRESERVE THE SITE'S COMPARATIVE ADVANTAGES**	→ lack of coordinated spatial planning at sea and on land → distinctly separate management and spatial planning responsibilities at sea and on land → unlike land management, the marine environment management regime lacks the hierarchy, procedures, spatial documents, and zoned land use → marine interventions (including zoned land use) are laid down partially (with regulations), i.e. lacking integrated strategic spatial plans **→ CONFLICT OF SPATIAL INTERESTS** **→ CONFLICT OF JURISDICTION**

Source: Čok et al. (2014).

We defined 10 key spatial and/or programmatic cases (Figure 2). The consequences are reflected in the conflicts among programmes or users, which makes the search for rational solutions to the existing situation increasingly difficult.

All these facts were then implemented, as specific baselines, in the OPPN production procedure and later in the design of the final spatial solution at the PGD level.

Figure 2. **Strunjan Bay, existing condition – problems as the result of uncoordinated land use on land and at sea**



CONFLICTS AS A CONSEQUENCE OF UNCOORDINATED PLANNING AND LAND USE AT SEA AND ON LAND
1. Mussel growing site; location, scope, and use of the sea – too close to the shore
2. Fishing – unregulated fishing infrastructure on land
3. The beach – unregulated (power) supply and logistics, incompatible with waterways
4. Nautical infrastructure – unregulated situation
5. Nautical "straits"; inconsistency with applicable norms (safety distances)
6. Maritime public passenger transport – lack of organised access to the coast
7. Spatial development and/or visual spatial degradation (dispersed building)
8. Stationary traffic – conventional and alternative solutions – environmental impacts
9. Tourist infrastructure – environmental impacts, conflicts with traditional uses concerning the marine environment
10. Traffic infrastructure in the coastal zone – environmental impacts and the lack of parking spaces

Source: Čok et al. (2014).

3.3 Detailed spatial solutions and zoned land use (3rd stage)

The area was structurally divided into 5 spatial units with mostly programmatically completed land use. Based on previously defined starting points, we elaborated a spatial solution for each area (Figure 3), (Figure 4). For 3 spatial units and 5 sites at cadastral municipality k.o. Morje we drafted a proposal to change the zoned land use in order to harmonize the developments in terrestrial and aquatic areas. 4 coordination meetings and, finally, a public presentation were conducted in the planning process.

Figure 3. **Sites of the individual sequences with detailed spatial arrangements**

Area 1: Plateau under Hotel Krka
- proposal for developing a parking area and a multi-purpose plateau, green areas, and open public spaces.

Area 2: Existing beach between the hotel and the Lambada building
- proposal of upgrading the existing situation, traffic-calming measures, implementation of new beach arrangements.

Area 3: "New beach" between the Lambada building and the *mandrač* area
- restoration proposal, creation of new capacities (practically a new public beach sequence).

Area 4: - the *mandrač* (fishing port) area
- proposal of renovating the existing conditions, renovation of the port's perimeter, berths, slipway, and other necessary infrastructure (fishermen, mussels – mariculture).

Area 5: SW edge of the Salt Pans' site
- design of the landscapes between the Salt Pans and Hotel Salinera, refurbishment of the perimeter wall, walking surfaces, etc.

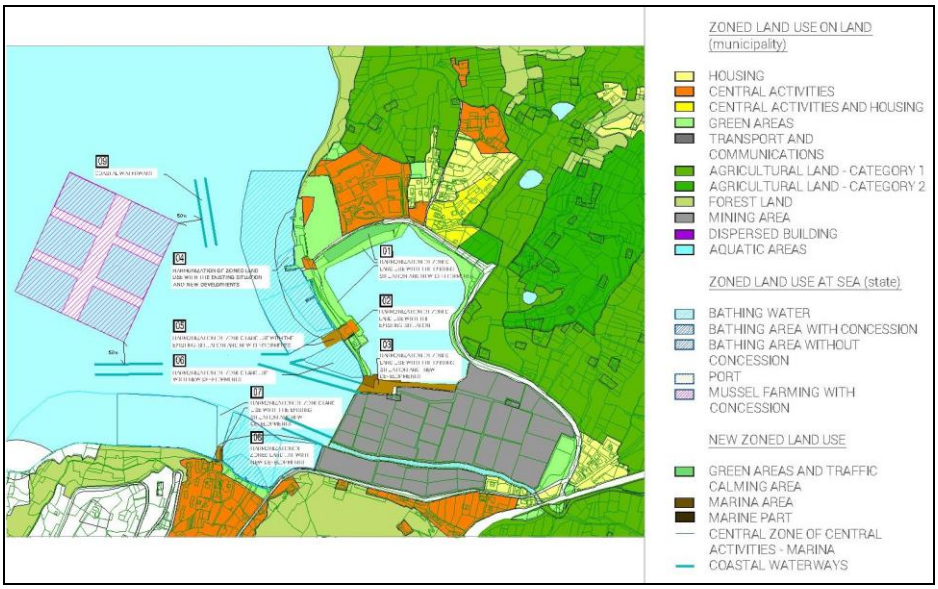
Source: Čok et al. (2014).

Figure 4. **Beach development concept, traffic-calming measures, design of micro-ambiences, and internal links**

Source: Čok et al. (2014).

During this stage the following was established:
- most spatial solutions (coordinated among all stakeholders) are practically impossible to achieve without a prior change in the zoned land use (Figure 5) both on land and at sea (sea use requires land infrastructure, which is not the case in the current procedures);

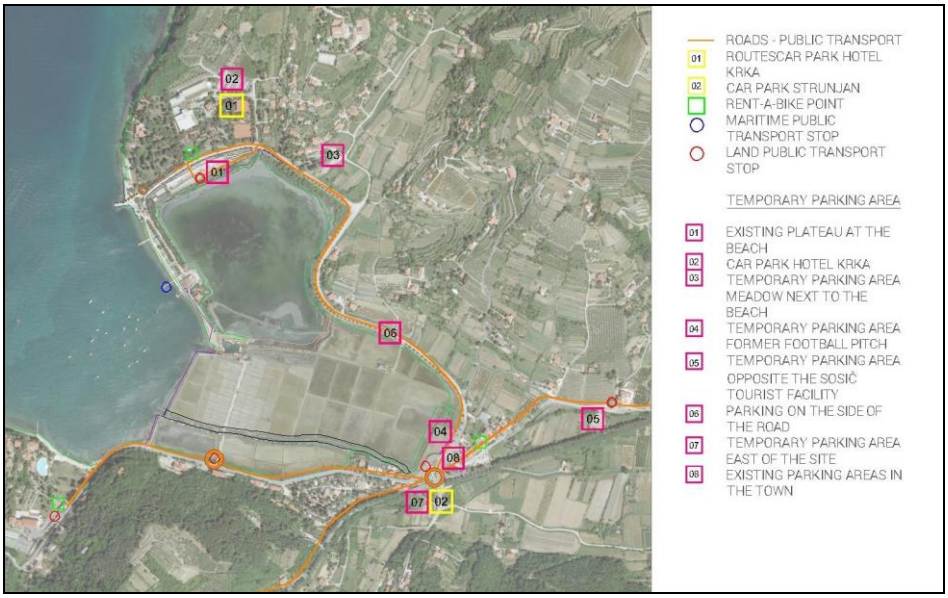
Figure 5. **Strunjan Bay, proposal for a harmonised land use - an integrated solution for terrestrial and aquatic areas**



Source: Čok et al. (2014).

- to find an acceptable solution, ongoing and repeated harmonisation of spatial solutions with users is necessary, along with collaboration with spatial planning operators competent for land and those for the sea (this is not the not case in the current procedures, a problem of efficient practice);
- to design efficient solutions it is necessary to expand the planning areas on land (mostly due to the design of transport supply, traffic-calming areas, and links to the public transport network). The proposed dimension of 100 m, as introduced by the ICZM Protocol, is too small in this case (Figure 6). It is necessary to expand the "zone of influence" in the marine part (planning of sea routes, waterways, and landing piers).

Figure 6. **Traffic regulation concept, solution proposals**



Source: Čok et al. (2014).

We found that the formal process of PIA production for land, as laid down by the existing legislation, is not highly problematic. To achieve the results sought, more engagement of those drafting and producing PIA would suffice; they should more efficiently include the individual interests and stakeholders in the process itself (individual steps taken in good practice examples cannot be codified).

3.4 Bases of the integrated management model

When designing integrated management, the existing methodology and practice should be upgraded in the following way:
- to implement a comparable planning system into spatial legislation for aquatic land in the same way as is now the case for land (now the use of the sea is governed by relevant decrees). This way, enough similarities of both systems will be given to allow for harmonised land use planning;
- in planning coastal zone development on land and at sea it is necessary to consider synergistic effects; thus, at the level of the Municipal Spatial Plan (hereinafter: OPN) drafting for

the terrestrial part and in designing the concession areas for aquatic land it is necessary to define the requirements of each activity (so far this practice was not part of formal procedures);
- for each development it is necessary to define the broad zone of influence, as determined by the existing zoning system defining the zoned land use for individual spatial planning units (the scope of the technological part, activities on land, system of transport supply, links to inland, etc.).

On this basis we propose that for the coastal corridor of a width of 200 m (terrestrial part) and 400 m (aquatic part) a new so-called “intermediate system” be established, as an upgrade of drawing-up of the OPN, OPPN, and NUMO, to be implemented by the municipality, subject to the agreement of the State (this area consists of all beach developments, piers, waterways, nautical infrastructure, transport supply, etc.). This system will be based on a simultaneous determination of zoned land use and production of spatial solution (PIA). In this case the procedures could be carried out relatively quickly, along with ongoing harmonisation of spatial planning operators for terrestrial and aquatic parts. On completion, the proposed starting points were presented to the institutions monitoring and funding the SHAPE project. Presently, they are being implemented in the relevant segments of legislation and practice. Slovenia is presently (in the 2015–2017 period) in the process of adopting a new spatial legislation and in this context the opportunity has been identified to promote integrated management.

4. Discussion

The formally adopted ICZM Protocol at the national (strategic) level is only a first step towards developing the actual integrated management system. It will be efficient only if its provisions are adequately carried out also at the implementing level (Rochette and Billè, 2012). In the study we found that the current spatial conditions can be mostly attributed to the dichotomy of managing terrestrial and aquatic areas, which corresponded to the former partial approach (as in the case of other Adriatic countries). Thus the initial hypothesis is confirmed. Moreover, the simulation showed that under the current legislation it is possible, to a certain degree, to implement individual provisions of the Protocol, and that both in the profession and public administration there is already evidence of more “efficient” spatial management. This finding is confirmed by a growing number of good-quality projects in Slovenian coastal region, based on over 20 years of implementing “sustainable development goals” in national legislation and practice.

In the case of Slovenia, to develop integrated management as a “formal model” will require procedurally harmonising the formerly separate jurisdictions for terrestrial and aquatic parts and designing a methodology that will expand the range of project bases, more efficiently include the relevant stakeholders in the planning and design process, and appropriately interpret the development interests in the context of protection regimes.

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