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TOURISCAPE2

Transversal Tourism and Landscape

CONFERENCE PROCEEDINGS

Barcelona / 5th - 6th November 2020

edited by

**Ricard Pié, Carlos Rosa, Josep Maria Vilanova,
Joaquín Sabaté, Enrico Porfido**

TOURISCAPE2 - Transversal Tourism and Landscape International Scientific Conference

Barcelona, 5th-6th November 2020

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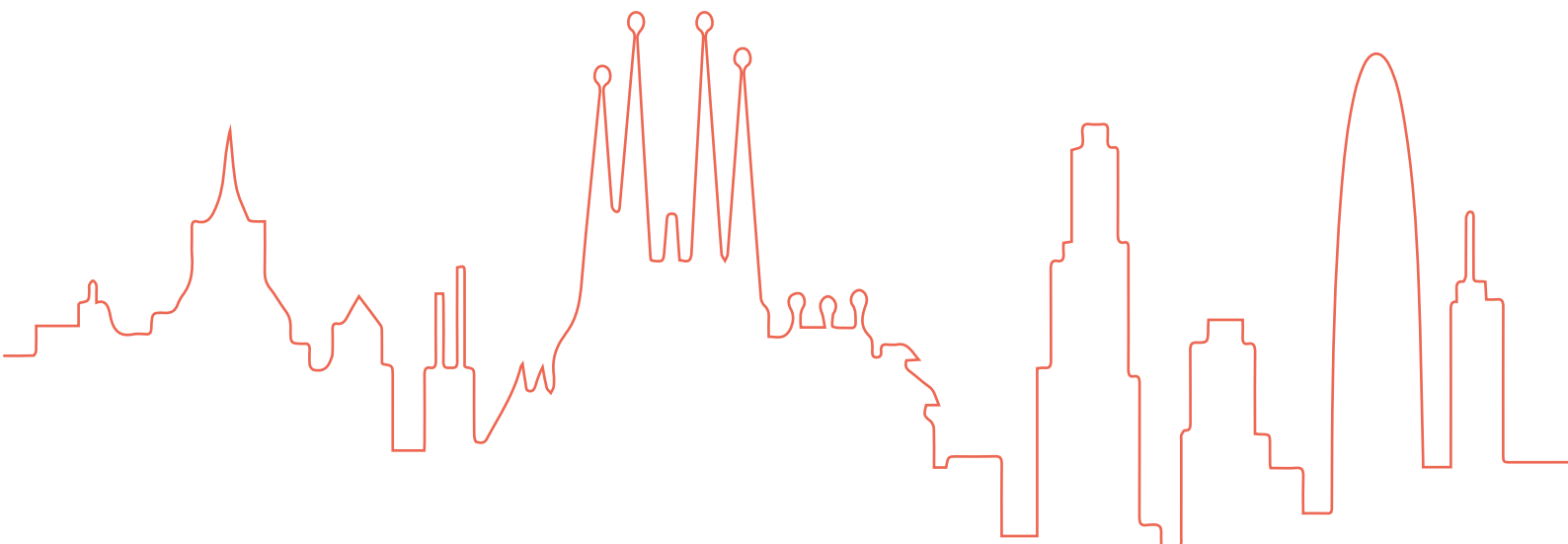
INTRODUCTION **TOURISCAPE2**

Welcome to the second edition of the International Scientific Conference **TOURISCAPE2 – Transversal Tourism and Landscape**, which this year will take place virtually in Barcelona from 5th to 6th November 2020.

The main topic of discussion will be the **relationship between tourism and the landscape** and, in particular, the problems of the tourist city. The tourist city has two sides, on the one hand the consolidation of the urban aggregate built during the boom of mass tourism as a city and, on the other, the tourist transformation of the post-industrial city. In addition to these cases, we will also discuss the role of landscape in rural tourism.

The congress aims to gather **researchers of different study fields, focusing on the analysis and/or projects of tourism and landscape**. Architects, economists, geographers, landscapers, sociologists, planners, anthropologist and all the academics interested in the spatial dimension of this phenomenon are welcome to join us and to share their experiences.

The academic community answered with energy to the call and we received more than **120 proposals** from 183 authors affiliated to 50 different university in 16 countries. Organized according to different research lines, **the proceedings include the final 80 full papers accepted** and which have undergone a **double-blind review by the international scientific committee**. A selection of the best papers concerning tourism cities and urban tourism will be published in the thematic number of the **International Journal of Tourism Cities** in 2021. While a selection focused on touristic territories and landscapes, have been included in the **book "Turismo y paisaje 2: sobre arquitecturas, ciudades, territorios y paisajes del turismo"** edited by Tirant Lo Blanch. For copyright reasons, the full text of those last two groups of papers are not included in this proceedings book, but the abstract.





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CONCLUSIONES

Tourist landscape mutations, design in climate change projections: the Ravenna coast case study

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ABSTRACT

Climate change involves variations in physical, economic and social conditions and landscape is directly impacted by them. Tourist preparatory requirements are tightly connected with landscape state and economic success, to a territorial transformation, whether artificial or natural, corresponds to a variation to the tourist attractiveness. Italian tourism sector will suffer heavy losses related to CCs which, as evidenced by SNAC, "range from 0.25% to 1.05% of GDP", according to that national and regional climate change adaptation strategies recommend multiple objectives based on indirect actions.

We apply and integrate these strategies focusing on Emilia-Romagna coast which is highly exposed to climate change risk, in particular we refer to the Ravenna's Climate change adaptation plan that was produced by the Sealine Research Centre turning actions and conclusions into tourist perspective. The aim of this work is to propose a new process in order to obtain designed coastal areas which are simultaneously resilient to climate change and tourist attractiveness. By inserting two variables into the SEbD process such as climate change and infrastructure development interventions we are capable to optimize the targeted actions making them useful both for the protection of the territory and for the sustenance of the tourist economic sector. Declaring new transformations, which refer to the future territorial mutations that the requested infrastructure implies, we emphasize actions that will certainly be necessary but also that can become advantageous within heterogeneous sectors. This research generates a new tourism perspective in relation to climate change, present new direct strategies which can be applied to design landscape in the short and medium term and propose a systemization of different subjects

Keywords

Coastal, tourism, landscape, mutations, climate change, scenarios

with the aim of reconsider the position of landscape architecture in design hierarchy emphasizing its process management capability. The results can direct strategic and design actions included in the framework of territorial planning programs coordinated by public institutions. A strategic and planning synergy from different scopes would benefit both sectors with a double result: territory resilience and tourism sector maintenance.

1. INTRODUCTION

Climate change brings substantial changes to the physical, economic and social conditions of a territory. The tourism sector, in its most aesthetic sense, is closely linked to the image of a place and to the variation of it varies the attraction exerted towards the visitors who will choose or decline such destination. In Italy, the tourism sector will suffer heavy losses related to CCs which, as evidenced by SNAC, "range from 0.25% to 1.05% of GDP". As underlined by G. Wall and C. Badtke (1994) "consequences of climate change could include the alteration of natural features, making tourism less attractive than previously in a region", the quality requirements expected by the tourist class are closely linked to the economic success of the destinations. Winter tourism depends mainly on the presence of a reliable level of snow, summer tourism is influenced by water quality, coastal erosion and the consequent loss of beaches. According to C.M. Hall et al. (2013) "it is evident that all tourism destinations will need to adapt to climate change". The Intergovernmental Panel on Climate Change (IPCC) studies the impacts and risks generated by the CC, emphasizing the climatic and territorial transformations currently taking place, highlighting the substantial changes that our planet is undergoing. It is necessary to anticipate and direct such changes in such a way as to make the tourist offer resilient by reducing the risk exposure and mitigating the effects of the CC. The National Climate Change Adaptation Strategy (SNAC) states that tourism is, however, strongly exposed to the negative consequences of climate change. This is both, in direct terms, because the development of tourist activities requires favourable climatic conditions, and in indirect terms, because the changed physical conditions of the destinations may indirectly decrease their tourist attractiveness. Nevertheless, the actions proposed in relation to the tourism sector are limited, general and not specific. Adaptation and mitigation strategies should take a forward-looking approach, supporting the perpetual evolution of the landscape and guiding it through the inclusion of project actions that also refer to other sectors (infrastructure, engineering, environmental, etc.) with the aim of integrating according to logic of interdisciplinary. As stated by R. Di Giulio et al. (2018) "many of the practices of maintaining and managing the ecosystems that surround us imply the constant planning of infrastructural interventions that decisively affect the built environment, the shape of the landscape". Focusing on the case study of the Municipality of Ravenna this article demonstrates how by defining strategic lines, that include design actions deriving from different fields and supporting the changes in the landscape induced by CC, it is possible to improve the



Fig. 1 / Coastal erosion in Marina Romea. Source: Mencarini (2018)

tourist offer increasing the resilience of the economic sector and reducing the risk exposure of the coastal territory concerned. Ravenna is one of the most attractive tourist destinations in Romagna but its territory has important issues related to the sea level rise and the increase in temperatures as well as to the prolonged periods of drought. In the global context outlined by IPCC, the work of L. Perini focuses on the possible effects of rising sea level on the coastal zone of Emilia Romagna by bringing global scenarios back to the regional scale. The area that includes the territory of Ravenna according to L. Perini et al. (2017) "turns out to be the most critical of the E-R coast because of the high subsidence rate that characterizes its northern part, between Cervia and the mouth of the United river". Beaches, in the last years, are going through increasingly difficult periods during the winter months and the measures taken to safeguard them are no longer sustainable, as stressed by Dr. Thomas Herrington of the Center of Maritime Systems, Stevens Institute of Technology "rising seas will make maintaining artificial beaches prohibitively expensive or simply impossible". Punctual and rigid defensive interventions are no longer enough in order to counteract the increasingly intense and sudden storms that occur in winter, requiring constant use of economic and physical resources. The rise in sea level due to the CC has a direct impact on coastal areas, with substantial changes in the morphological and infrastructural structure of the territory involving several sectors: tourism, agriculture, production, etc. The Ravenna coastal plain is highly vulnerable due to widespread coastal erosion, sea water intrusion, swelling and land erosion. The rise of the sea is one of the major problems of the CC and requires direct actions to be taken in the short and long term. In the next decades, the combined effects of land subsidence and sea level rise are expected to increase the instability of the coastline, leading to a further retreat of it, involving 0.5 - 1.0 km of frontal entry by the sea. The Municipality of Ravenna presents areas, today identified as sensitive, which will experience the increase of problems related to CC and on the other side the mutation of their physical characteristics substantially (Fig. 1).

2. A SCENARIO EVALUATION BETWEEN TOURISM AND CC

2.1 Objectives

The aim of this research is to demonstrate how, through landscape design, it is possible to improve the resilience of coastal tourist areas by adapting them to the changes induced by the CC and mitigating their effects. In particular, we understand how the planning and transformation actions of the territory can intervene on the coast of Ravenna that will be affected, as underlined by the Regional Strategy (2019), "of the new climate regimes and the risk of a decrease in summer attendance and an overall economic decline in the sector".

Moreover, the research wants to emphasize how the existing planning practices, today separated and barely communicating between them, can instead, cooperating within a wider strategic vision planning, directing the transformations of the territory involving different areas. It is intended to highlight how such practices intersect, according to prospective and long-term logic, can improve the quality and quantity of the tourist offer and can lead possible projects with the aim of increasing the resilience of the seaside resort in Ravenna.

The study, following the SNAC guideline, also sets the goal of raising awareness of how and how much we will have to rethink the coastal landscapes in order to make them more suitable and performing than the risks related to CC to which not only the tourism industry is exposed. The hypothesis on which the research relies is that the landscape, as described by P. Bélanger (2009), is meant as "a sophisticated, instrumental system of essential resources, services, and agents that generate and support urban economies". Its design today represents an holistic practice capable of lead and direct different scales strategies within different fields, this allows to have a complete and pragmatic view of the involved issues in the territory ranging from technical to the economic and social sector.

2.2 Methodology

The research work is part of the CC adaptation and mitigation policies promoted by the Municipality of Ravenna, the University research center Sealine took care of the creation of future scenarios in which the Administration will insert the strategies of territorial planning and the future design actions. The methodology is based on the research line "SEbD" (Scenarios' Evaluation by Design, introduced and developed by the Sealine Laboratory), a planning technique applied, at the beginning, to economic systems and declined then, by the Research Centre, to spatial and infrastructural themes related to landscape and environmental changes. This method makes possible to predict and, consequently, to respond to the possible future transformations to which the landscape will be subjected. The scenario approach develops multiple narratives and alternative paths of territorial evolution, allows to anticipate and reveal the possible developments of complex phenomena such as social, political, economic and environmental. To project itself along distant temporal

horizons, it is essential to rely on verified data, taking on some variables as of interest for the chosen place and the design theme. The Scenarios' creation is, therefore, a useful tool to understand which CC transformations will change the Ravenna territory and how these will affect tourism. Following there are the methodological steps that have defined the analysis and project process.

1. Preliminary desk analysis: through the study of design examples, extrapolated good practices applicable at the project level in coastal tourism areas at risk. Through the analysis of three case studies we show how the landscape project and the transformation of the territory, in response to CC, can be compatible with the attractiveness and accessibility of the places and how they can improve, in terms of resilience, the coastal tourist landscapes. The following case studies have been selected within a wide, but still too limited, panorama. These interventions should represent a common practice within the landscape project by rejecting what is the purely aesthetic line of the discipline. The case studies have been chosen by territorial typology (coastal tourist areas) and purpose (fight against CC). Netherlands is 26% below sea level. This condition implies a constant control and rearrangement of the landscape with the aim of protecting some parts of the territory, sacrificing others and modifying others. The coast is therefore a sensitive limit where action is needed, case studies are projects drawn up and carried out in the Netherlands Country which today is identified as being at the forefront of landscape project themes in response to CC and coastal landscape management.

a) *The new hondsbossche dunes, Noord Holland, West 8*

client: JV of V.O. Dredging and Marine Contractors bv and Boskalis for Hoogheemraadschap Hollands Noorderkwartier

keyword: coastal defence, dunes, dynamic sand engine, recreational activities

In this area of North Holland the access to the beach is a distinctive feature of the place. The defence from the rising seas and from marine weather, every year more violent and unpredictable, is clearly legible along the entire Netherlands coast, in particular the Sand Motor, state-of-the-art project for the protection of coastlines through the dynamic management of coastal reclamation. The strategy chosen by the landscape architecture studio is precisely to use dynamic systems for protection against erosion; if addressed these systems are able to create new landscapes, in continuous evolution and mutation, without abandoning the tourist vocation of the place that presents the access to the coast a necessary condition.

As pointed out by West 8 the project "creates opportunities to simultaneously strengthen the region, enhance and embrace the quality of the natural environment and bolster recreational activities", the theme of landscape use, in particular the one designed, is not of secondary interest. This shows how the synergy between two very different themes, the protection from extreme events caused by the CC and seaside tourism, is possible and achievable

through targeted and conscious projects. The examined one creates a new and declared dunes landscape. The project of the soil and its management play a fundamental role, a new topography is created and new environments are realized. The dune vegetation is autochthonous and it also contributes to the protection of the coast through its rooting in the dunes structure. Dunes and beaches merge in an artificial landscape that, while remaining unitary and coherent, performs different functions: increases the safety of the coastal coast and decreases its erosion, increases the resilience of the coast and adjacent territories, increases environmental quality and stabilises existing ecosystems, creates new recreational spaces and optimises the existing ones. Technical solutions, carefully defined and realized with extreme precision, are tested on a large scale and become the theme of the project maintaining in their technicality a fundamental narrative character boundary line between the engineering project and the landscape architecture project. The new beaches created by West 8 near Petten and Camperduin represent a good example of how new tourist landscapes can be created and, if included in strategies of territorial transformation applying extensive scientific and technological knowledge, how they can improve the condition of existing territories exposed to the risk.

b) Dune crossovers + wind pits, Maasvlakte 2, H+N+S Landschaps→architecten
client: port of Rotterdam

keyword: coastal defence, dunes, coastal tourism, infrastructure implementation

The project of H+N+S studio is born from the necessity of the harbour authority to increase its logistic area through the expansion of the Maasvlakte, including the creation of the new spaces for the recreation and the tourism. The expansion phases, begun in 2008, are two and they moved about 365 million m³ of sand transforming 2000 ha of territory. Half of that amount has been destined to the harbour activities, while the remaining part is constituted by the so-called "outer contour" where they introduced, exactly, all those collateral activities regarding the marine commerce. The new landscape, created by the Dutch studio, makes fluid and communicating three different landscapes: the technical and functional port, the natural port, the tourist-receptive landscape. This last space consists of beaches, artificial dune ecosystems, underground parking. As pointed out by the study "the design featured in Sturdy, tough landscape to suit the vast scale of the project, with long sight lines, robust viaducts, an accessible beach designed for intense public usage and large car parks". What is important in this case study is how it accepts the nature of the landscape, changing and evolving, leaving room for natural transformation processes such as wind erosion, marine erosion, sedimentation and new dune formation. The project compares the dunes landscape and the productive infrastructure, not seeking a mitigation of the latter, but, rather, by dialoguing the new and the existing ones with careful planning arrangements and choices. Both landscapes are accepted and the user can participate on two perceptive levels: through panoramas and points of view (port and terminal) and through the

uses (beaches and dunes). The parking spaces on the beach can accommodate up to 1500 parking spaces and they are located in the rear dune so they strengthen the structure of the landscape and the dune ecosystem. Looking at this detail, the parking design, we can see how the studio moves beyond the preconceptions regarding the theme man-nature, "by shaping the parking as man-made interventions within the semi-natural dune landscape, the dual functional and natural qualities of the Maarsvlakte 2 are emphasised". In this case, the direct investment in an infrastructural system, the port, has however made improvements respecting the existing landscapes and ecosystems and created new ones. Beaches, with its own services, are an example of how new seaside tourist landscapes can be created by other investments; the project is also a clear example of how large-scale landscape design can bring improvements to the whole area concerned and related sectors by pragmatically exploiting the new potential of expansion plans.

c) Katwijk coastal defense, Katwijk, Okra Landschapsarchitecten

client: Gemeente Katwijk, Hoogheemraadschap van Rijnland

keyword: coastal defence, dunes, coastal tourism, urban areas

The intervention proposed by the architects of the OKRA studio is part of a program launched by the Netherlands Ministry of Infrastructure and Environment with the aim of strengthening the coastal defensive line without, however, affecting the strong tourist vocation of the area. The investments related to the structural implementation of the Dutch Coast had therefore to support resilient projects also of the economic and tourist point of view, in doing so the economy of the neighbouring cities would not have suffered any damage caused by the extreme events related to the CC nor those possibly suffered by the construction of rigid defences such as barrage walls or concrete dams. The architects say that "with the need to strengthen the Katwijk coast, care is taken to preserve the value of the existing town and, ultimately, how this can also be made stronger'. We can deduce, from this the multiple functions, that the project proposes: to protect the territory, to improve, and not only maintain, the tourist offer with consequent positive effects on the economy of the city.

The existing relationship between urban pattern and beaches is a recurring theme in most of the globe, the constant and frenetic covering of land with concrete has led to a oppression of buffer zone between land and sea. Those transitional ecosystems, interstitial with such different conditions, are nowadays absent or drastically contracted. In the case of the Katwijk coast, as we can notice in the north of the Binnenwatering channel, the dune ecosystem is predominant and constitutes a natural barrier against storms and extreme marine events. The project reintroduces this barrier by creating new dyke-in-dune coastal defences, which openly also perform other functions besides the main purpose of fighting the sea level rise, such as, for example, the underground parking which constitutes the structural heart of the dunes system. Wide paths and spaces

are inserted as a connective pattern between towns and coasts, they maintain high accessibility to the places, so they can preserve their tourist essence. In its ephemeral being, for the hidden functions and the defences from the natural appearances, it is a clear example of how it is possible to create a coherent landscape and accepted by the community that does not leave out themes such as tourism and economy but implements and improves them.

2. Critical analysis of the risks: through the reading of the cartographies that compose the Municipal Strategic Plan (PSC) an integrated vision of the Ravenna territory has been created. It was necessary to interact with different professionalisms in order to better understand the specific data of each discipline; the interdisciplinary nature of SEbD is a fundamental condition for the success of the methodology and in order to obtain an higher precision in the future scenarios' creation. Landscape is a complex system and as underlined by A. Farina (2012) "actually the landscape is a subject that belongs to complexity and as such cannot be simply defined uniquely". The hierarchization and interpolation of the data has been executed using a GIS software, that has allowed an overview of the elements and the criticalities characterizing the Ravenna territory.

3. Taxonomy of the elements: in order to understand the interferences between the infrastructural elements that compose the landscape and its future modifications a list has been drafted, according to specific criteria of analysis. For each selected element has been highlighted: the consistency, that is the imprint of the element in the territory; the interactions, that is the current connections with different systems and possible implementations; the areas of potential impact, those areas directly and indirectly invested; stakeholders, that are people or organizations in relation to the element itself. This analysis is a replicable framework based on the observation of invariants and themes which are easy to find in different contexts; necessities and infrastructures will vary, but there are always two-way relationships between the elements that establish the landscape. Being aware of such physical and formal relationships is a sine qua non for the complex design of the landscape.

4. Alternative scenarios: as anticipated, the research is based on the creation of alternative future scenarios to understand the transformations made by the CC with respect to the landscape and to decline these mutations to the tourism sector. Scenarios are a complex and articulated part of research because the veracity is based on the results of the proposed strategic and project actions. The Intergovernmental Panel on Climate Change (IPCC) generates multiple heterogeneous global scenarios in terms of impact and time horizons, taking into account specific hypotheses of rising Earth temperature and rising sea levels. The time horizon to which we refer in our research is set at 2100, a useful period to consider landscape changes in line with the natural times, much more dilated than the anthropic ones. The scenarios of the Fifth Committee's Evaluation Report are taken as the basis for the creation of future forecasts, they

are combined with detailed National and Regional forecasting models in order to develop those scenarios directly linked to the territory of the Municipality of Ravenna. For the generation of the scenarios we used the two variable method, composing a matrix 2X2, where variables are: the approach adopted in terms of defence of the territory, the future implementation of the infrastructural nets. The four different scenarios are obtained by the interpolation of the two variable and their two relative declinations.

The first of the two variables, the defence approach, can be summarized in two different types of interventions: rigid defences and soft defences. The character of the adopted protection influences the type of future scenario and the effect that this will have on the shape of the new landscape. Among the coast defence systems, the rigid works are those that most characterize and affect the aspect of the landscape. Their further implementation, in order to face the rising sea level, will require a rethinking of the seaside tourism and the type of establishments now spread along the coast. These will have to change in formal and functional terms adapting to the continuous surface decrease of the beaches of the Romagna's Coast. Among the elements of the rigid defences we find brushes, barriers and embankments. The soft defences of the coast involve a constant management and handling of sand whose contribution is mainly guaranteed by the beach nourishment with material from off-shore deposits. The result is a constant moving landscape a cause of the combined action of the sea and man, who interferes to preserve a precious resource for both environmental and tourist purposes. Future scenarios will allow the maintenance of this system only in view of the backwardness of the coastline. The second variable is linked to future infrastructures and, therefore, to the possible paths they may have. With the research and technological developments the typology and the spaces necessary for the movements of our species will change and it will have a different impact on the landscape. The construction of new roads, railways, airports, naval routes has a significant impact on the landscape, the SEbD binds to those possible transformations seizing them as possibilities and not as limitations or restrictions against the evolution of the territory. It is reiterated how the landscape is understood by us as a direct consequence of natural and anthropic actions, and how they can be directed in a conscious and pragmatic way with the aim of controlling the evolution and modification of the landscape for economical, infrastructural, social, tourist and environmental purposes.

5. Transfer scenario: (Fig. 2) following the creation and identification of different long-term scenarios, set at 2100 time horizon, they are synthesized and optimized through a comparison of themselves. The transfer scenario is used for the creation of a future condition which gives several opportunities without compromising any of the four scenarios configured in the previous step. Through data and cartographies' overlapping, extrapolated from the matrix, we are able to recreate a temporally closer condition, set at 2050, on which we can apply design actions in the short-medium term. The transfer scenario assumes a higher complexity because it represents 4 declinations, two for each variable.



Fig. 2 / Scenario transfer, merging soft scenario (above) and rigid scenario (below). Source: Sealine (2020)

6. Areas identification: by intersecting the criticalities of the Ravenna territory, the places of coastal tourist interest and the transfer scenario we extract the areas in which the intervention of defence, indistinctly rigid or soft, can be an element of protection and resilience compared to the CC, but also a new opportunity for tourism and economy of the seaside territory. The coast of the Municipality of Ravenna extends for 38 km and it has 198 beach properties distributed along 9 different seaside resorts: Casal Borsetti, Marina Romea, Porto Corsini, Marina di Ravenna, Punta Marina Terme, Lido Adriano, Lido di Dante, Lido di Classe, Lido di Savio.

Two study areas have been identified, which present heterogeneous characteristics about the theme of defence and the current exploitation linked to tourism.

A. The first study area, coastal area 01, is located on the northern border of the Municipality and includes the area from the mouth of the Reno to Spina Lake, between the Comacchio Valleys and the sea. The site has an highly articulated environmental diversity, starting from the Romea road, in a succession of coastal dunes interposed by vast brackish depression zones, valleys and wetlands. The coastal belt is characterized by the "Veins of Ancona" swamp which forms an integral part of the "Nature Reserve ZCS-ZPS of Bellocchio". The project focus aims to define an adaptation strategy capable of ensuring, in the medium term

(2050), maintenance of biodiversity and environmental conditions favourable to the particular fauna and vegetation of the area. This intermediate configuration must be able to evolve indifferently towards one of the two scenarios that, in the long term (2100), ensure the survival of the natural area in environmental and climatic conditions very different from currently ones.

B. The second study area, coastal area 02, is located in the southern area of the coast of the municipal territory, between Lido di Dante and Lido di Classe, it extends from the coast inland to the "Riserva Naturale Pineta di Classe". The main hydrographic network is characterized by the presence of the United Rivers to the north, more to the south the Torrente Bevano and then the Savio River. Inside there are several ecosystems of recognized landscape-environmental value such as the pine forests, the State Reserve Duna Costiera Ravennate and Torrente Bevano mouth, the Ortazzo Valleys, and agricultural areas largely below sea level. The aim of the project is to define an adaptation strategy capable of maintaining, in the medium term (2050), the mix of defence functions and tourism implementation, promoting the development of practices more resilient to climate change. This intermediate planning of the territory will be able to evolve indifferently towards one of the two scenarios, rigid or soft, which in the long term (2100) will ensure the safety and balance of the territory. The Reno River estuary shows how it is possible to create new coastal landscapes by exploiting the changes necessary to protect the territory; the one between Lido di Dante and Lido di Classe is useful to understand how to adapt the current coastal tourist systems to the mutations of the landscape related to CC.

7. Proposed strategies, in the final stage, we propose the landscape design actions which are able to make aware changes to the territory and the environment. The scale of these actions ensure an adequate change in the spatial planning, it would be useless to propose specific interventions that would limit the effectiveness of the same in relation to wide-ranging issues such as the CC.

3. RESULTS

The integrated risk vision presented, the proposed new intervention strategies and the suggested design actions are able to transform the territory, supporting its natural evolution and that induced by the CC according to considered and pragmatic logic. The territory of the Municipality of Ravenna is subject to significant environmental risks but the proposed new conditions of planning of the landscape, if implemented in short time, would increase its resilience and implement its tourist potential. The results of this research should guide the strategic actions included in the framework of spatial planning programmes, coordinated by public institutions, and guide the investments of stakeholders in relation to the mutation in the landscape induced by the CC. The landscape project proposed for the Municipality of Ravenna turns out to be a fundamental instrument for the processes of mitigation and adaptation to CC of those tourist

areas strongly to risk and, if implemented in short times, is able to improve the seaside tourism offer through the creation of new hyper-natural landscapes along the coast of Ravenna. Specifically, the results are well described by the design actions that materialize in relation to the two case studies. Proposed actions are applicable in the short and medium term since they relate to a time horizon set at 2050. They are compatible with the transfer scenario and do not exclude any of the four possible future scenarios previously identified by the SEbD method. The proposed actions are strategic and design actions at the same time, in fact they are able to: direct the future transformations of the territory by proposing a new planning vision of the landscape; identify sensitive areas where to intervene in a pragmatic and timely manner; define actions with different resolution, high resolution for those interventions that can be found in all four future scenarios, low resolution for those interventions that are useful for only one/two scenarios and on which it will be possible to intervene in successive phases. The design actions are therefore configured as operational tools able to adapt the territory and prepare it for future changes that will increasingly impact the coastal landscape without compromising its possible implementation in terms of tourism and resilience.

A. In the case of coastal area 01, close to the "Sacca di Bellocchio", are proposed strategic and design actions able to protect the areas between the Romea road and the coastline from the future rise of the seas and, at the same time, to create new coastal landscapes through the partial deviation of the Reno river. The state of fact analysis and the extrapolation of the territorial signs of the landscape identified as soft elements the Reno river, the coastline and the retro coastal system, and as rigid the Romea road and the embankment system. Specifically, the implementation of rigid signs, through the upgrade of existing infrastructure, would increase the resilience of the territory: a first line of defence is created along the sea embankment system, while a second line is set up along the Romea road thanks to the creation of a new system of pine forests close to the new artificial beach. The natural evolutionary dynamics of the landscape are supported and they are considered among soft systems. A new deviation of the Reno River course, compared to the freshwater lagoon system, allows the formation of a second artificial and usable beach, in this way the tourist areas become two: the beach facing the embankment overlooking the salt water system, and the pinewood front beach on the freshwater system.

B. In the case of coastal area 02, between Lido di Dante and Lido di Classe, the main objective is to create a defence system useful also to protect the internal territory and maintain the tourist vocation of the coastal area. The proposed actions within this case study concern the transformation of the dune and coastal landscape vocation. What the project proposes is a rethinking of water management, both fresh and salty, facing the maintenance of sea defences, thus safeguarding the beaches and urban areas located behind the existing coastline. A portion of the existing pine forests, now stressed by the increasingly hostile environmental conditions, is sacrificed to allow salt water entrance,

while some agricultural areas are instead destined to accommodate freshwater basins. The salinization provided by the salt water intrusion is countered by freshwater basins through the controlled aquifer recharge. Moreover, the dune ecosystems, currently in good condition, are strengthened, as seen in the case studies above, ensuring the creation of new areas with a high tourist potential. New hyper-natural landscapes are created in succession: coast, dunes, wetlands and pine forests.

4. CONCLUSION AND DISCUSSION

The different nature of risks acting on the coast, combined with the forecasts related to the worsening of climatic processes, requires a new vision for the territory and the protection of coastal tourist areas. The research contribution is only a first step towards the identification of possible solutions to the theme of adaptation to CC for the territory of Ravenna. Starting from the analysis of the territory characteristics and the processes that have determined its current landscape structure, future changes and transformations are expected, in order to create a projection within which to develop strategies and projects. We believe that the means to implement these strategies are the infrastructure systems which, if designed in an integrated way with the environment, can respond effectively to the threats of CC and are able to draw a new landscape characterized by an high tourist potential. The application of SEbD methodology gives the possibility of proposing actions that do not hinder the different projections made by the scenario matrix. The proposed strategy responds to existing risks and leaves the possibility of spatial development towards the two long-term scenarios identified. In this way, it is provided to the Administration a tool for supporting the strategic choices that can and must be implemented in the future, through further deepening and the development of other case studies. The vision of the methodology, however, is limited by the few variables that can be inserted and controlled by this process, the factors that affect the landscape are innumerable and controlling all of them would be complex. There are still opportunities for improvement in the number of producible and analysable scenarios. Implementation of the methodology currently adopted would ensure better action plans in terms of foresight and cost optimisation. Moreover, a synergy of planning actions within the various municipal offices would be able to develop a double result: resilience of the integrated territory and improvement of the tourism sector. The project of territorial infrastructure and landscape requires an interdisciplinary approach with an high degree of cooperation between scientific, ecological, engineering and economic disciplines. Here we propose a systematisation with the aim of considering the position of landscape architecture in the hierarchy of the design process, emphasizing its capacity for process management. This does not mean to diminish or encourage the simplification of current practices, very complex and articulated, but instead wants to open a debate on the possible creation of control booths, where the role of the landscape architect, trained

in an appropriate and specific way, may coordinate a complete vision to address choices and project actions on issues of fundamental importance today. Regarding to the risks caused by CC and more generally to respect to natural changes of the landscape, the preservation and maintenance of the territory and its contemporary historical conditions is no longer sustainable. It is, in fact, utopian to say that the landscape is a static, immobile and unchanging entity. On the opposite, it is in constant evolution and also the anthropic force is one of those variables that directly or indirectly guide its changes. Being aware that transforming the landscape and the territory is indispensable in order to maintain our and other species, allows us to accept the function that our society has today: a role of wise guardians, capable of maintaining, but also modifying, ecosystems and terrestrial species.

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REFERENCES

- Bélanger, P. (2012): Landscape Infrastructure: Urbanism Beyond Engineering, in Pollalis, S.N., Schodek, D., Georgoulas, A. (Eds.), *Infrastructure Sustainability & Design*, Routledge, London, UK, pp. 276-315.
- Bélanger P. (2009), "Landscape as Infrastructure", *Landscape Journal*, Vol. 28, n. 1, pp.79-95, ISSN 0277-2426.
- Di Giulio, R., Emanuelli, L., Lobosco, G. (2018) 'Scenario's evaluation by design', *Techne*, 15, 92-100.
- Emanuelli, L., Lobosco, G. (2016) 'hyperNatural landscapes', *Albanian Riviera*, pp. 42-45.
- Fancourt M., (2016) 'Scenario Development a review of approaches', *UNEP-WCMC*, Cambridge, UK, 978-92-807-3586-4.
- Farina A. (2012), 'Foundational paradigms for a landscape science", *Benevento Congress*.
- IPCC (2019), 'Impacts of 1.5° of Global Warming on Natural and Human systems', Ch. 3, 177-283.
- Ministero dei beni e delle attività culturali e del turismo (2017), 'Strategic tourism development plan 2017-2022'. Available at: <https://www.turismo.politicheagricole.it/home-piano-strategico-del-turismo/piano-strategico-del-turismo-pst/>
- Ministero dell'ambiente e della tutela del territorio e del mare (2014): 'National Strategy for Adaptation to Climate Change', available at: <https://www.minambiente.it/notizie/strategia-nazionale-di-adattamento-ai-cambiamenti-climatici-0>
- Nicholis M. (2014), 'Climate Change: Implications for Tourism', *University of Cambridge*, Cambridge Institute for sustainability Leadership. Available at: www.cisl.cam.ac.uk/ipcc
- Perini L., et al. (2017) 'Sea-level rise along the Emilia-Romagna coast (Northern Italy) in 2100: scenarios and impacts', *Nat. Hazards Earth Syst. Sci.*, 17, 2271–2287.
- Perry A. (2000) 'Impacts of Climate Change on Tourism in the Mediterranean: Adaptive Responses', *Fondazione Eni Enrico Mattei, Working Paper*, No. 35.2000.

- Questioni di Economia e Finanza (2019), 'Tourism in Italy: numbers and development potential', Banca d'Italia Eurosystem, July 2019, No. 505.
- Regione Emilia Romagna (2019): 'Mitigation and adaptation strategy to climate change of Emilia Romagna region', available at: <https://ambiente.regione.emilia-romagna.it/it/cambiamenti-climatici/temi/la-regione-per-il-clima/strategia-regionale-per-i-cambiamenti-climatici/la-regione-per-il-clima-la-strategia-di-mitigazione-e-adattamento-per-i-cambiamenti-climatici>
- Roson R., Sartori M. (2012), 'Climate Change, Tourism and Water Resources in the Mediterranean: A General Equilibrium Analysis', The Center for Research on Energy and Environmental, Bocconi University, Milan, Working Paper Series, No. 51, 1973-0381.
- Stive M., et al. (2013), 'The sand engine: A solution for vulnerable deltas in the 21st century?', Conference paper.
- Strang, G.L. (1996) 'Infrastructure as Landscape', Places, Vol. 10, No. 3, 8-15.
- TopDAd (2015), 'How will Climate Change affect Tourism Flows in Europe?', VTT Technical Research Centre on Finland Ltd. Available at: <http://www.topdad.eu/news/brief-of-topdads-results>
- Wall G., Badke C. (1994), 'Tourism and Climate Change: An International Perspective', Journal of Sustainable Tourism, Vol. 2, No. 4.



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