

## Scenario Planning Method in Conceiving Future Development of Peripheral Areas: Island – City – Spatial Interconnecting for the Sustainable City of Tomorrow

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### Abstract

Islands and island archipelagos, as typical peripheral areas, are of particular interest for both researchers and spatial planners. In this research the importance of the scenario method, especially in the education of future spatial planners is emphasised. The Zadar Island archipelago in Croatia was chosen as a case study for which eight possible scenarios were proposed. According to the evaluation the best rated scenario was developed in the long-term vision. Necessary activities in the form of different models (housing, transport, economy, green infrastructure) and related development projects were proposed for a period of next 25 years. Proposed models, with some modifications could be applicable to areas with similar characteristics.

**Keywords:** development vision, education, islands of the Zadar archipelago, scenario planning, strategic thinking and planning

### 1. Introduction

Peripheral areas of Europe as well as areas with geographical specificities, including islands and island archipelagos, are particularly interesting and challenging for both researchers and planners. Since the inner peripherality is the result of multiple combinations of features and processes in the space and different development dynamics, such spaces can also have significant development potential limitations. Conventional peripherality, as a result of physical geography and remoteness, is strong and in fact difficult to improve. As peripherality is determined also with non-spatial processes and factors, it is necessary to comprehensively look at and conceive appropriate development strategies, as well as policies and measures in order to achieve better accessibility, better economic potential and access to services of general interest, and consequently a better demographic situation for such areas (ESPON, 2017; ESPON, 2019).

Based on the sustainable development goals of the UN Sustainable Development Programme 2030, the Republic of Croatia created the *National Development Strategy of the Republic of Croatia until 2030* (2021), which determined four development directions (Sustainable economy and society; Strengthening resilience to crises; Green and digital transition and Balanced regional development) and thirteen related strategic goals, as a contribution to global sustainability goals. (Figure 1)

RAZVOJNI SMJER NRS-a 2030.	STRATEŠKI CILJEVI NRS-a 2030.	DOPRINOS CILJEVIMA ODRŽIVOG RAZVOJA
 <p>1. Održivo gospodarstvo i društvo</p>	<p>1. Konkurentno i inovativno gospodarstvo 2. Obrazovani i zaposleni ljudi 3. Učinkovito i djelotvorno pravosuđe, javna uprava i upravljanje državnom imovinom 4. Globalna prepoznatljivost i jačanje međunarodnog položaja i uloge Hrvatske</p>	
 <p>2. Jačanje otpornosti na krize</p>	<p>5. Zdrav, aktivan i kvalitetan život 6. Demografska revitalizacija i bolji položaj obitelji 7. Sigurnost za stabilan razvoj</p>	
 <p>3. Zelena i digitalna tranzicija</p>	<p>8. Ekološka i energetska tranzicija za klimatsku neutralnost 9. Samodostatnost u hrani i razvoj biogospodarstva 10. Održiva mobilnost 11. Digitalna tranzicija društva i gospodarstva</p>	
 <p>4. Ravnomjeran regionalni razvoj</p>	<p>12. Razvoj polupomognutih područja i područja s razvojnim posebnostima 13. Jačanje regionalne konkurentnosti</p>	

Figure 1. Connection between the Strategic Framework of the National Development Strategy of the Republic of Croatia until 2030 and the UN Sustainable Development Goals. Source: Official Gazette (2021)

In accordance with European development policies for balanced regional development, the Republic of Croatia wants to reduce internal differences in the level of development and make all parts of the country better and more desirable, while achieving permanent growth, demographic recovery, strengthening social justice and social trust. Goal 12 "*Development of supported areas and areas with developmental peculiarities*" is aimed on undeveloped areas, which refers to areas with developmental peculiarities - hilly and mountainous areas and islands. The main development of such areas is related to the unfavourable economic structure (weak role of the private sector and large presence of the state sector, insufficiently developed human capital, low entrepreneurial culture, insufficiently efficient institutions), depopulation, emigration and aging of the population. In addition, islands and hilly-mountainous areas are faced with specific challenges such as insufficient transport connections and seasonal infrastructure overload.

The national development strategy envisages *Development of smart and sustainable islands*. The concept is based on an integrated approach to the development and digitisation of island resources and management, taking into account the specifics in terms of traffic, energy, security and risk prevention, as well as the availability of infrastructure and public services. The goal is to encourage integrated passenger transport, interconnecting of the islands and their connections with the mainland. The planned structural changes of the island economies aim to strengthen the island's capabilities and capacity to implement innovative solutions in response to key social challenges (climate change and environmental protection, clean energy and traffic,

health and quality of life). In order to revive the island economy and vitality, emphasis is placed on the digital economy, tourism, availability of public services, renewable energy sources, fishing, food production and processing. Investments in the development of digital infrastructure are supported as a prerequisite for successful digitisation and digital transformation of island communities. Strategic connection of the islands with entrepreneurs and universities is planned in order to define and implement sustainable solutions for specific problems, including the concept of "smart islands".

The National Development Strategy (2021) sets the following policy implementation priorities on development of smart and sustainable islands:

- smart and sustainable management of island resources and environment, fight against climate change and risk prevention
- sustainable development and structural transformation of the island economy
- smart mobility and connectivity
- development and construction of optical broadband infrastructure and high-capacity communication networks
- improvement of life quality through development of public infrastructure (utility, water supply, transport, business and social infrastructure), support of housing and public services development.

In order to choose the most suitable development direction for islands and island archipelagos, it is necessary to consider the national and regional development plans, think strategically about the space and look at the long-term needs of inhabitants, as well as possibilities and spatial potentials on the local level.

The aim of this work is to emphasise the importance of the scenario method in planning as a par excellence tool for the future development. Its importance in the education of future spatial planners is pointed out so that they can think strategically about space, and to design and valorise possible scenarios of cities and regions in the 21st century (ECTP-CEU, 2013).

## **2. Education of Spatial Planners and Scenario Method in Spatial Planning**

According to the UNECE (2008) spatial planning is a key instrument for establishing long-term, sustainable frameworks for social, territorial, and economic development both within and between countries. Its primary role is the enhancement of the sectors integration, and the improvement of national and local systems of urban and rural development, while taking into account environmental considerations.

As ECTP-CEU (2013) point out spatial planning, as a discipline, operates at different scales, from European, transnational, national, regional to local plans. Therefore, the principal education of spatial planners must be conceived in the way they get the abilities to cope with different scales and different levels of territorial planning.

As cross-disciplinary, spatial planning involves different professionals and actors. The planner's role responds to planning developments in society and laws and policies. Primary focus of spatial planning is on the interest of society, the settlement and the region, and their development in long-term. The spatial planners are committed to protect the general interest of society. They analyse, draft, implement and monitor development strategies, supporting policies, programmes and key projects. They are engaged in the various phases and scales of the planning process. In planning, the role of the planner as a mediator is important, because

planning is not only concerned with plan preparation, but is part of the process where public and private interests need to be balanced. Ability to mediate and to negotiate are therefore important in planners' education. In order to support and guide the public planning process, the planner's role requires increased design, synthesis, managerial and administrative skills. Besides it demands a scientific approach, the achievement of social dialogue and agreements. The challenges of the 21st century require planners to undertake the commitments as leaders of change, political advisors, designers, urban managers and scientists in order to lead the way in making the changes that are needed for cities and regions to achieve the Vision and to apply the principles for sustainable development. (ECTP-CEU, 2013)

According to the ECTP- CEU the planners' core commitments, embodied in the Charter of European Planning, include research and analysis, advocacy and mediation, the ability to envision, evaluate and promote potential future options for urban, spatial, and territorial development. University-based recognised planning courses for spatial planner are combining scientific and creative conceptual thinking with practical approaches in order to harmonise society and environment at various territorial levels. The ECTP- CEU (2017) has identified the framework of guidance based on three needs and the related eight core competences of spatial planners:

- Critical thinking and understanding of the rationale of planning and its theoretical and legal basis (The Rationale of Planning)
- An understanding of the spatial systems (Socio-economic systems, The Built Environment, Environmental systems)
- Technical and creative competence needed to engage in planning practice (Planning Techniques, Planning Instruments, Planning "Products" and Independent Research).

Spatial planners therefore must have a range of core competences and a commitment to ethical standards of conduct. Understanding, knowledge and skills of the following are required: the economic, social and environmental spatial context for planning decision; the political and legal framework within which decisions are taken; the ability to initiate and implement plans and policies; analytical, design and communications skills to inform choices, including the application of research knowledge; and the ethical challenges including the need for inclusive approaches and reflective learning; and the ability to collaborate and in co-working. (ECTP-CEU, 2017)

As it can be seen on the Figure 2 that the planning process is continuous and cyclical because spatial systems change, and planning needs to adapt to these changes. Further the preparation of the planning product is informed by research into socioeconomic, built, and natural spatial systems. The planning product is implemented by the use of legal, financial and administrative instruments. That will have an impact on the spatial systems as these change as a result of planning intervention. Those changes in the nature of the spatial systems will require renewed intervention, or changed intervention that will require updating planning policies. Since planning is more than an administrative or bureaucratic process, planning intervention is not always necessary and must be justified. (ECTP-CEU, 2017)



be based locally. In order to enable the assessment of the outcomes and effects on different aspects of sustainability, in the context of different assumptions or scenarios a detailed investigation of strategic issues is necessary. Radeljak Kaufman (2016) points out that the scenario method is useful in spatial planning because of the creation process during which knowledge about development trends and spatial elements is expanded, but also because of the final results that are important for management strategies and measures.

In the education process, students as future spatial planners are directed to strategic thinking and the use of the scenario method, that presents an efficient tool to articulate concepts of an uncertain and complex future. This tool serves as a basis for defining an integrated vision of development of cities and regions. The application of scenario planning based on Intuitive logics school, which does not use any mathematical algorithms, stimulate students' intuition and creativity, which is the methodology proposed by Stanford Research Institute International (SRI). The advantage of the SRI approach is the development of flexible, internally consistent scenarios from an intuition and logical perspective (Huss and Honton,1987). Besides the importance of flexibility in the process of creation of a spatial development vision, has to be taught as well as the need to create at least four scenarios which enable an open discussion and the combination of different interests of stakeholders in the process of defining the preferred model and creating a common development vision (Vogelij, 2010).

In the process of education, students are directed to elaborate strategic visions that are considered as the basis for creating high quality places and delivering a more sustainable future for communities as well as to achieve their long-term needs. Using comprehensive planning, as an effective tool for enabling communities to formulate strategic visions of their future development goals, future spatial planners are taught to apply the integrative approach that allows an evaluation of the strengths and challenges of the specific area, the definition of opportunities and scenarios, and selection of optimal vision and spatial policies for the future development.

At the Faculty of Architecture of the University of Zagreb during the Undergraduate and Graduate Studies in Architecture and Urbanism students encounter various tasks in the field of urbanism and spatial planning. On the third semester of the Master Study in Architecture and Urbanism students have the opportunity to choose between fourteen workshops led by professors from the Faculty of Architecture. Workshop 3 - Spatial planning is one of three workshops led by professors of the Department of Urban Planning, Spatial Planning and Landscape Architecture. The main goal of the course is to propose a vision of the spatial development of chosen area (region or city) based on the principles of sustainability and the proposed topic depending on the academic year. The first stage of students' assignment includes a consideration of theoretical starting points and a detailed analysis of the existing situation, spatial planning documentation and strategical document, which ends with a SWOT analysis as a basis for the second stage. They are directed to perceive spatial strengths, weaknesses, opportunities, and threats considered from different perspectives, immersing themselves in the different roles played by various actors. Besides they are encouraged to use surveys to determine the key issues and needs of residents and users of the subject area. In the second stage, students independently or in group research conceive various scenarios for the future development, taking into account complex systems and numerous processes. Based on the set criteria, the evaluation of development scenarios is made and development vision as well as a concept for the subject area (graphics, model) is proposed. In the third stage, a more detailed elaboration of the program for the selected location and the proposal of strategic and development projects are made.

### 3. Case Study: Islands of the Zadar Archipelago

For this research, the islands of Zadar archipelago were chosen as a case study, because of its specific geographic characteristics as well as socio-economic processes, as depopulation and emigration, and the relatively old population. The project was made within the Workshop 3 – Spatial Planning in the Academic year 2022 / 2023 (students: Lucija Kustić and Marta Marelić, mentor: Associate Professor Lea Petrović Krajnik). The goal of this project is to set up a revitalisation model for (Croatian) islands, that is, to create a model that is applicable to other areas with similar characteristics and similar challenges.



Figure 3. Position of Zadar County and Islands of the Zadar Archipelago. Source: Kustić and Marelić (2023)

#### 3.1. Specificities of Zadar County and Islands of Zadar Archipelago

The Zadar County (area 7,276.23 km<sup>2</sup> and 159,766 inhabitants) is located in the central part of Adriatic Croatia and has an important role in transport connections within the country, but also on the European level, since it is located at the intersection of two important transport routes (the pan-European transversal North - South and the future Adriatic - Ionian longitudinal) and is the location of the shortest international ferry connection with Italy. (Figure 3)

Zadar County includes 34 local self-government units, of which six are cities and 28 municipalities. The largest city and administrative centre of the county is Zadar, the fifth largest city in Croatia (70,779 inhabitants). Zadar is the urban centre of northern Dalmatia and the administrative, economic, cultural and political centre of the region.

Zadar County is specific for the number of islands, the indented coast, the fertile zone of Ravni Kotari and hilly - mountain area. It is made up of seven spatially developmental and geomorphological units regarding its natural-geographic features (Zadar urban region, Zadar islands, Ravni Kotari coastal area, Sub-Velebit channel area, Bukovica, Lika-Poun area and a part of the island of Pag). One of the units is the islands area, which is formed by the northern

fragmented group (Silba, Olib, Premuda, Ist, Škarda, Molat te Tun), the Ugljan-Pašman group (Ugljan, Sestrunj, Rivanj, Ošljak, Pašman, Babac te Vrgada), and the Dugi otok group (Ravu, Iž, Zverinac, Lavdaru te Katinu). The island archipelago represents one of the most sensitive and endangered areas of the county with specific demographic and developmental problems of aging and displacement of the population and the consequent decline of economic activities. (Ministry of Economy and Sustainable Development, 2024)

The *Spatial plan of Zadar County* (2023) and the medium-term strategic planning act of importance for Zadar County, *Zadar County Development Plan* (2022), which defines special goals for the implementation of strategic goals from long-term strategic planning acts were used as the basis for the analysis of existing and planned situation, development needs and potential of the county and the determination of development goals.

The analysis of the demographic structure of the population of Zadar County indicates that settlements on the mainland have a better ratio between old and young population, while all the islands of the archipelago have less than 20 percent of young population. This trend was evident in three previous population censuses. One of the reasons for such a trend is centralisation, which encouraged the emigration from the islands, and represents one of the most significant topics.

The road infrastructure on islands varies depending on the size, the number of inhabitants, tourism development and other factors. Due to unplanned development, some areas are not equipped with sufficient transport infrastructure, there is a deficit of parking space, which is often organised in inappropriate locations, and public transport is insufficient. The island of Silba is an example of an island where cars are prohibited. Ferry and boat connections to the island depend significantly on the number of permanent residents and tourists, and the number of lines is significantly higher during tourist season. The maritime connection between islands is weaker because all lines are primarily directed towards Zadar and some of these lines interconnect different islands in order to be more profitable.

The total of 34.48 percent of county's area is covered by the NATURA 2000 ecological network, of which Public institution Natura-Jadera is responsible for 25.33 percent. Conservation areas important for birds cover 26.4 percent of county's surface and conservation areas important for species and habitat types cover 24.76 percent. There are several protected categories of nature on islands, one of which is the Telašćica nature park, three special reserves on Pag and one on Dugi Otok, significant landscapes on Dugi Otok, the island of Pag and the island of Ošljak. The natural environment of islands of the archipelago is well preserved because of their partial isolation.

The geographical position of the county and climate conditions favour the production of energy from renewable sources. The area of Zadar County is exposed to strong winds, especially in the area at the foothill of Velebit, where 8 wind farms have been built, which make up 23 percent of the total power of all wind farms in Croatia. In addition, out of twenty small hydropower plants in the Republic of Croatia, four of them are located in the county. The largest is HPP Velebit located in Zadar County, which is also the second largest hydropower plant in Croatia. In order to realise the plan of the Republic of Croatia to increase the share of renewable energy sources to more than 50 percent by 2030, the planning and construction of solar panels and the use of solar energy, which the country is abundant of, began. Zadar County has almost 2,500 hours of sunshine per year, which significantly favours the use of solar energy. Out of a total of nine large, non-integrated solar power plants built or planned so far, two of them are located in Zadar County - Obrovac and Stankovci.



### **3.2. Development Scenarios of Islands of the Zadar Archipelago**

Taking into account the goals of sustainability, the current situation, and the inhabitants needs, the basic goals to be achieved in the long term by the project were to limit the emigration and aging of the population, to offer new facilities, modernise life on islands, but also to recognise the quality that this way of life offers, with an emphasis on (self)sustainability which is to be achieved through the integrity of the approach to planning future development.

Based on the detailed analyses, eight scenarios were proposed as possible directions of development. (Figure 5)

The "Status quo" scenario continues the current trends in the area characterised by the aging and emigration of the population. All island settlements will continue to gravitate towards Zadar as the centre. The islands will remain–poorly connected by traffic, so there would be no cooperation or complementing each other with facilities, which would be an undesirable and unsustainable scenario.

The scenario "Strengthening the existing island centres" - Pag, Ugljan, Dugi Otok and Pašman, is based on the idea of partial decentralisation of Zadar, because the centres are formed around larger settlements. Residents primarily move to these places and to these islands, which results in smaller islands becoming abandoned and available for conversion and renovation with the appropriate purpose - agricultural, production, tourist, cultural or recreational islands.

The "Networking" scenario - the islands as a whole - the city, envisages interconnection - both in terms of traffic and various facilities, at the level of all the islands of the observed area. The intention of this scenario is for the islands to be seen as neighbourhoods within a larger whole - the "island-city", which aims to increase the availability and sustainability of the facilities and attract residents to permanently move to islands and to be less dependent on Zadar.

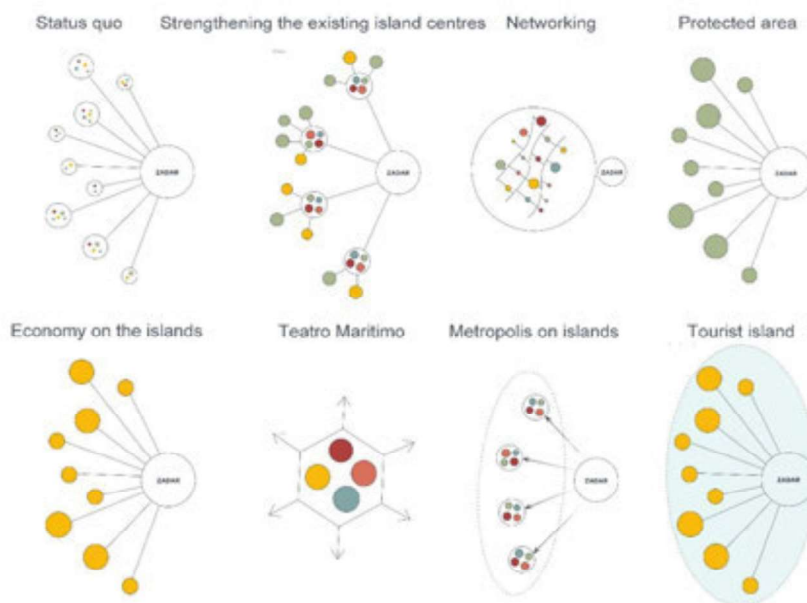


Figure 5. Eight Possible Scenarios for the Islands of the Zadar Archipelago. Source: Kustić and Marelić (2023)

The "Protected area" scenario envisages the relocation of residents and facilities to Zadar. In this way, islands would be natural protected oases. All the islands of the archipelago would become part of Zadar, and would represent a protected landscape used for research purposes, sports and recreation, and tourism.

The "Economy on the islands" scenario predicts further development of Zadar as a centre, due to which the population moves to the city, while islands remain abandoned. Islands of the archipelago with great potential become a part of Zadar economic zone intended for development of clean industry, modern agriculture and energy production from renewable sources. The number of permanent residents is decreasing, as well as the aging trend, as the necessary workforce is immigrating.

The "Teatro Maritimo" scenario is based on Aldo Rossi's idea of a floating theatre, i.e. public facility that floats to the user, instead other way around. In this way, the number of necessary daily commuting would be reduced, and at the same time the availability and profitability of the facility would be increased (due to larger gravity).

The "Metropolis on islands" scenario is based on the premise that life in existing cities becomes so poor and/or even impossible (due to pollution and the consequences of climate change) that the population moves to islands in search of better living conditions. The islands of the archipelago become cities where the necessary infrastructure, facilities, residential construction are built, and existing ones are renovated. This scenario is the riskiest (out of the above) as it could result in devastation and environmental pollution.

The "Tourist island" scenario is based on the idea of turning islands of the archipelago into Zadar tourist zone, due to further centralisation. It is based on the assumption of year-round tourism, various supporting facilities and the necessary infrastructure. It is characterised by complete subordination to tourism. Permanent residents of islands are necessary for the maintenance of the entire infrastructure, while the rest of users travel to islands for work.



Figure 6. Comparison of Eight Scenarios. Source: Kustić and Marelić (2023)

Eight scenarios were rated based on 19 elements (population, housing, quality of life, economy, tourism, energy, food production, traffic, climate, risks, environmental protection, waste, dependence on a larger centre, waste, health, water supply, education, culture, administration and politics) and compared with each other. The graphs (Figure 6) show the evaluation of individual scenarios. The scenarios, although extreme, have some good elements that could be used in further planning. Based on the comparative analysis of the effects, the comprehensive "networking" scenario was chosen as the optimal. In the following, the scenario was elaborated into a vision in which some elements of other scenarios were included.

### 3.3. Development Vision - Spatial Interconnecting for the Sustainable City of Tomorrow

The vision of development is based on networking which implies interconnection - both in terms of traffic and various facilities, at the level of islands of the Zadar archipelago. The islands are seen as neighbourhoods within a larger whole - the "island-city". In this way, an effort is made to increase the availability and sustainability of facilities, and to attract residents to permanently move to islands, which would result in less dependence of island residents to the

city of Zadar. On each island there are facilities necessary for its function. Certain islands are assigned with one "main" purpose, resulting in creation of a larger centre (an "island-city"), which is well connected to other islands. The mutual traffic connection of islands is realised by public shipping and a network of autonomous electric boats that enable accessibility within the archipelago. (Figure 7)

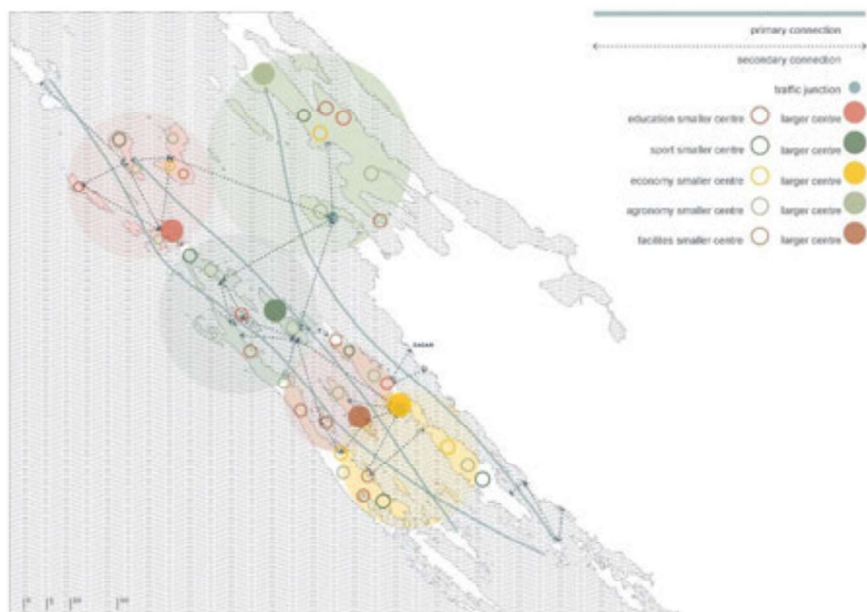


Figure 7. Development Vision for Islands Archipelago. Source: Kustić and Marelić (2023)

In order to enable the realisation of the vision for development of islands of the archipelago, four models were set as a part of the elaboration, namely: housing; traffic; economy; green infrastructure and facilities.

The housing model is based on the idea of flexibility, in order to meet the housing needs of people of different ages. In contrast to the usual acquisition of a housing unit that meets the needs of only a certain part of life, the model of rental housing is proposed. The first step is the valorisation of existing construction in order to determine which is suitable for renovation and reuse. After the energetic and structural-architectural renovation, the application process for residential unit begins, and units are allocated according to the needs, at acceptable housing prices. This would enable satisfying the needs and wishes of the residents. In the second step, there is a construction of new residential buildings according to the principles of bioclimatic approach and sustainability - modular, flexible and adaptable construction with the use of renewable energy sources and given location (e.g. solar energy for passive heating, greenery for passive cooling, sea water for cooling/ heating, rainwater, etc.). The model aims to create a community with facilities like urban farming, i.e. shared gardens, spaces for socialising and recreation, shared transportation, etc. This approach would reduce the unnecessary expansion of the construction area, and thus further devastation of valuable space. (Figure 8)

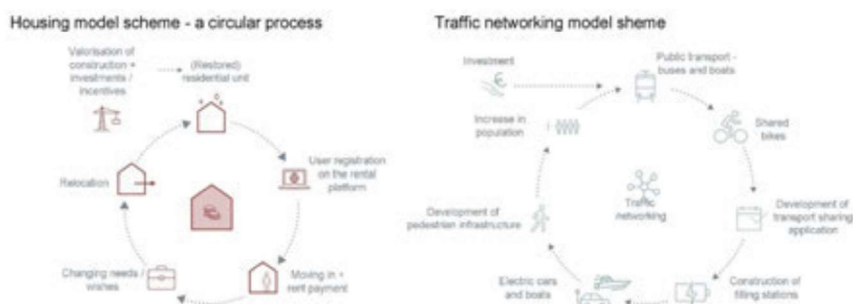


Figure 8. Housing and Traffic Model Schemes. Source: Kustić and Marelić (2023)

The concept of development of islands in the archipelago is based on their networking and observation of the entire area as a city. The transport solution is designed with two modes of transport - public and shared. Public transport includes electric autonomous (mini) buses and (fast) electric semi-autonomous boats, which get their energy from renewable sources. Another form is shared transportation, which includes bicycles, electric bicycles and scooters, cars and (small) electric boats. The boats used in the system are autonomous, although users still need a permit. The system is based on application which enables reservation and pick-up of a vehicle. In this way, the cost of living is reduced because the need to own a personal car and a boat on the island is significantly reduced. A long-term increase in the population is predicted, which will require further development of the transport network and an increase in the number of lines that would become more profitable in the future. This solution frees up areas used for parking, which are often located by the sea, and is repurposed into walkways and bike paths, areas for recreation and green infrastructure. (Figure 8)

The economy model is focused on the development of several economic areas. It is based on transport connections, since islands create a whole in terms of production process in which tourist, agricultural and other economic activities are distributed. A "clean" industry with as little negative impact on the environment as possible is planned by incentives awarded to entrepreneurs. The development of technology enables online jobs, for which a good network connection is a basic prerequisite. Renovated buildings house specialised research institutes that attract experts and (future) entrepreneurs. Thanks to good traffic connections, it is possible to link tourist attractions into a network, creating a good basis for the development of year-round tourism. Agriculture is planned to be modernised, to ensure an easier and more favourable distribution of products, which is also contributed to by the concept of "urban farms" on islands where the local population grows food on a smaller scale. The production of electricity on islands of the archipelago implies the creation of producer communities, energy infrastructure renovation and construction, which reduces energy needs. In addition to wind energy, thanks to the large number of sunny hours, the construction of solar farms is encouraged. (Figure 9)

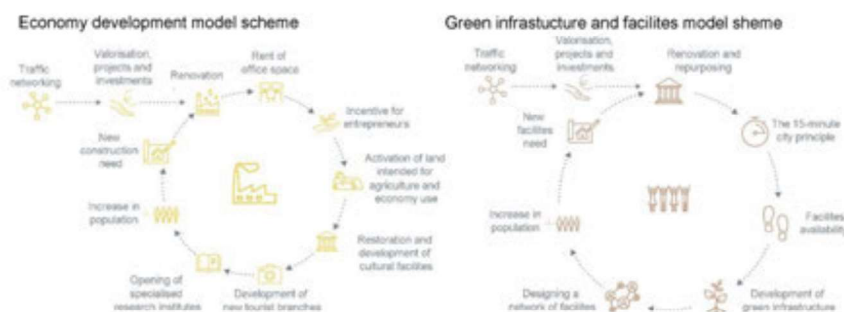


Figure 9. Economy and Green Infrastructure and Facilities Model Schemes. Source: Kustić and Marelić (2023)

The green infrastructure and facilities model is based on the creation of island and inter-island green networks. First, the arrangement of the existing green infrastructure is planned, and in the second step, the development of a new one. Outdoor sports and recreation facilities are directly linked to the green infrastructure arrangement plan, along with planning indoor sports and recreational facilities. This vision of development of islands of the archipelago increases its gravitational area, so public and social facilities become more sustainable and profitable. Development of new facilities continues on previous networking and is primarily based on the renovation and repurposing of existing construction stock. The archipelago was designed according to the principle of a 15-minute city and is based on the premise that each island should have facilities necessary for everyday life, upgraded by the "system" of public and social facilities in the archipelago. (Figure 9)

#### 4. Discussion

Whether it is planning at the regional or local level, special attention should be directed both to protected areas and to areas with developmental peculiarities, i.e. peripheral areas, such as hilly and mountainous areas and islands and island archipelagos, and the planning itself should be approached with utmost sensibility. With conventional peripheries resulting from physical geography and distance, which is a factor per se, what needs to be considered are non-spatial processes and factors, and it is necessary to approach them comprehensively in order to design appropriate development strategy, policy and measures. Documents and studies on European level provide a guidance on how to enable better accessibility, better economic potential and access to services of general interest, and consequently a better demographic situation.

In addition, national strategic documents, such as the *National Development Strategy of the Republic of Croatia until 2030*, emphasise the importance of such areas and strive to ensure balanced regional development by planning activities in those areas. In the National Development Strategy of the Republic of Croatia, one of the strategic goals is "*Development of supported areas and areas with developmental peculiarities*" which, along with other challenges of depopulation, aging population and less favourable economic structure, face insufficient traffic connections and seasonal infrastructure overload. With the concept of *Development of smart and sustainable islands*, priorities for the implementation of policies related to the management of island resources, the transformation of the island economy, the establishment of smart mobility and connectivity, the provision of modern electronic

communication networks and the provision of public infrastructure and services to raise the quality of life have been set at the national level. National and regional strategic goals become the basis for further considering and planning development of the area in question.

In addition to gathering theoretical knowledge, future planners should be involved in practical activities. The education of future planners is based on a combination of scientific and creative conceptual thinking and a practical approach, and through practice courses, such as the spatial planning workshop, the ability of research and analysis, advocacy and mediation, the ability to envision, evaluate and promote potential future options for urban, spatial, and territorial development is learned. Working in a group develops the ability to cooperate and work together, which is a necessity for planning. Students are encouraged to think critically and understand the logic of planning and its theoretical and legal basis. They are taught to understand spatial systems that, in addition to the built and natural environment, include socio-economic systems. During the planning process they improve the technical and creative skills necessary for their inclusion in the planning practice. Above all, the workshop is a place where, through the planning process, the importance of strategic thinking and planning on different levels is pointed out.

The use of the scenario method in the education process, as a practical application in workshops, is particularly significant because it encourages strategic thinking, development of intuition and helps overcoming thinking limitations. Development of several possible scenarios is particularly important in order to enable a comprehensive overview of the needs and possibilities, aspirations of various stakeholders, and an open discussion and flexibility in the process of creating a spatial development vision.

In this case study, eight possible scenarios for future development of the island archipelago are proposed. Creation of various scenarios enables a better overview of spatial possibilities, while the appropriate selection of criteria and their assessment in accordance with the initial goals develops the ability to make decisions that will influence further development of the area. Conceiving scenarios based on the sustainability goals indicates an awareness of the importance of development based on global trends, which through planning and intervention at lower levels contribute to the achievement of global goals.

This paper shows how the work which was focused on the local and regional development and revitalisation scenarios for islands of the Zadar Archipelago is focused in the next step on the development vision and the elaboration of models that enable its realisation. The vision of development and revitalisation of the islands of the Zadar archipelago set a broader framework for planning development of smaller settlements on islands. Based on knowledge about the specificity of islands as peripheral areas, with respect for national guidelines for such areas defined by the *National Development Strategy of the Republic of Croatia until 2030*, separate models that refer to important topics (highlighted at the national level as priorities for policy implementation related to the concept of *Development smart and sustainable islands*) have been set. The intention is to set up models that can be applied with minor modifications on other islands and island archipelagos with similar spatial systems and characteristics. The realisation of strategic and development projects in accordance with the proposed vision and models (housing, transport, economic and green infrastructure and content) in a period of 25 years would lead to revitalisation of settlements and improvement of quality of life at the local level, the revitalization of economic activities in the region, while at the national level it would contribute to the achievement of one of the strategic goals of national development – *“Development of supported areas and areas with developmental peculiarities”*.

## 5. Conclusion

In addition to the theoretical knowledge of spatial planning acquired during studies, practical application is necessary in order to prepare the future planner for the roles that await him in professional practice. The spatial planning workshop is one of the platforms where students in the final phase of their studies practically apply the knowledge and skills they have acquired. On different scales, they practice strategic thinking, research, analysis, synthesis, critical thinking and understanding of spatial systems, forecasting and planning development of selected area.

The methodology of scenario planning is used in the education of spatial planners in order to enable them to deal with the complexity of predicting the future development of cities and regions, and to see the possible consequences of spatial interventions. In addition, this is an opportunity to use a tool that encourages creativity and intuition and enables future planners to think one or more steps further into the future. The grounding of projects on European documents on sustainable development as starting points, and consideration of national, regional and local strategies and plans, as well as existing spatial planning documentation, is the basis for further consideration and planning. Through education, the continuity and cyclicity of planning processes and changes in spatial systems that require adaptation and flexibility is pointed out.

Students are encouraged to take a comprehensive look at spatial systems and other elements of the development process and to determine the criteria for evaluation of scenarios as a basis for development of a long-term vision concept. Working in a group allows critical thinking and questioning of planning decisions, while understanding causes and results of concrete development projects serves as a basis for creation of new spatial planning documents. In order to harmonise all requirements and their changes over time with the long-term development goals and the legislative framework, flexibility in planning is insisted upon in order to achieve the overall long-term sustainability of the selected area, both on the local and the regional level.

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