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POST PANDEMIC CITY

SPATIAL PROPOSALS FOR THE POST PANDEMIC CITY
THE CASE OF LEZHA.

A Project of the Joint International PhD Program IDAUP

POLIS University Albania / University of Ferrara Italy

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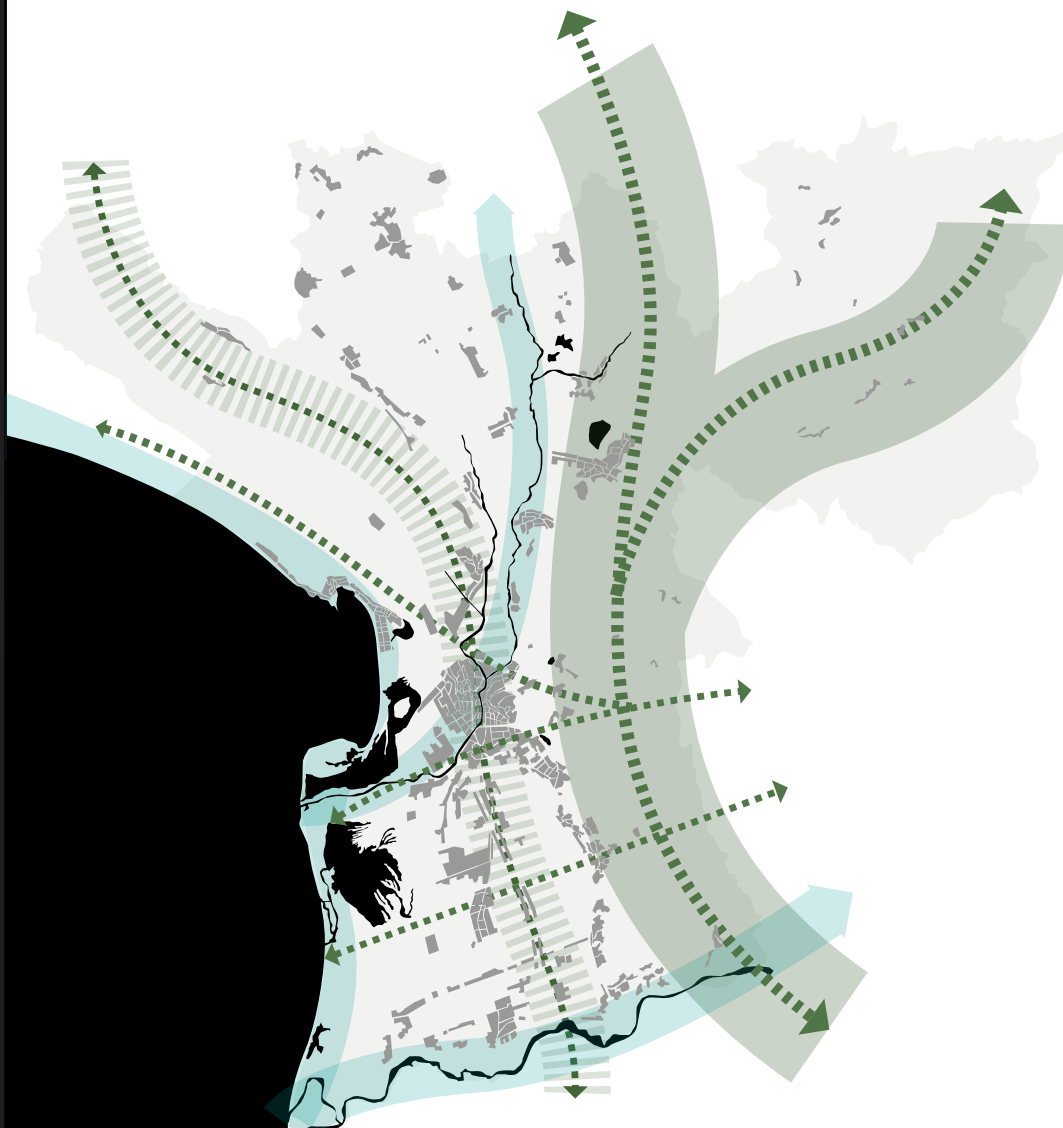

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Besnik Aliaj, Llazar Kumaraku, Sotir Dhamo and Skender Luarasi are the scientific responsible of the PhD Program workshop organized in the frame of the IDAUP - International Doctorate Program in Architecture and Urban Planning - between POLIS University of Tirana Albania, and the Department of Architecture of Ferrara University, Italy. In this publication they have also contributed in terms of contents and introduction, including interventions in some chapters, conclusions and in the elaboration of the index structure. The publication collects practical and theoretical experiences elaborated within the context of the "Scientific Research Department" and the research unit "Observatory of the Mediterranean Basin" (OMB). This issue was made possible by the support of AKKSHI / NASRI, Albania

The publication collects practical and theoretical concepts gathered and elaborated in structured and thematic contributes by PhD student from IDAUP Program. Chapter 3 collects the IDAUP PhD researchers' contributions, which have undergone a process of double-blind review.

List of historical publications
(2021) OMB No.7 Rethinking Gjirokastra. See here.
(2020) OMB No.6 Rurban Sequences. Dropull. See here.
(2019) OMB No.5 Prishtina New European Capital. See here.
(2018) OMB No.4 Projecting Shkodra. See here.
(2017) OMB No.3 When A River Flows. Seman See here.
(2016) OMB No.2 Albanian Riviera. See here.
(2015) OMB No.1 Durana Albania's New Sustainable Image. See here.

Originating work:
(2014) Regionalization of Albania! See here.
(2013) Albania 2030 Manifesto! See here.
(2011) Universi Tetove. See here.
(2010) Between Vacuum and Energy! See here.

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By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.

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By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

Issue Journal Goal - SDG30 Goal 11, Direct Target 3.d
Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

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Spatial proposals for the post-pandemic city. The case of Lezha.

Issue 1 & 2

A project developed in the framework of the
International Doctorate in Architecture and Urban Planning IDAUP
POLIS University, Albania / University of Ferrara, Italy
Co-supported by AKKSHI / NASRI, Albania

We have at hand a very important publication like the ones we are used to by POLIS. This issue attempts to answer the key question of post-pandemic city planning, with reference to Lezha. The issue is hot as the climate crisis has already brought about changes that have a huge impact in most regions of the planet. And these effects often now take the form of natural disaster. We recently saw the thousands of dead and the destroyed landscapes in Libya, right after the also huge disasters in Greece, from the storm Daniel. Another change comes from the experience of the pandemic, as this book rightly puts it. It is well argued that the architect and urban planner should rethink how we plan, what measures we take at a tactical and strategic level both to mitigate the effects and to prevent new ones. Covid is an opportunity to think and redefine ourselves by understanding the dynamically evolving course of architecture and urban planning. The book attempts, through the study of many components and aspects of reality, to compose a strategy that is very useful as well as exemplary, on the occasion of Lezha. Its essence, however, goes far beyond the case of Lezha because it raises in a well-elaborated way broader issues and strategic proposals concerning many places.

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Preface

Spatial Proposals for The Post Pandemic City. Panacea Planning and Architecture for The Third Millenium Settlement. The Case of Lezha Region.

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1. Introduction - This publication is the result of a research project, within the framework of the National Research and Development Projects (PKKZH) for the period 2021-2023, co-financed by Polis University (U_POLIS) and the Agjencia Kombëtare e Kërkimit Shkencor dhe Inovacionit (AKKSHI) / National Agency for Scientific Research and Innovation.

In the call opened by AKKSHI in March 2021, U_POLIS in cooperation with Co-PLAN - Institute for Habitat Development presented a research proposal with the title "Spatial Solution for the post Pandemic City: The Case of Lezha Region". This research proposal won the call made by AKKSHI and in this way it was funded as research by AKKSHI and by U_POLIS in cooperation with CO_PLAN. According to the chrono-program, the two-year project started in October 2021 and ends in September 2023, even though the staff involved in this project had been working on this topic for months since the beginning of the pandemic problem. So this publication is the product of an almost three-year research on the state of settlements after the global crisis caused by the Sars-Cov-2 pandemic that had its beginnings at the end of 2019 in China and later spread throughout the planet.

The working group of this project was directed by Prof. Besnik Aliaj, Rector of U_POLIS, and consists of Dr. Llazar Kumaraku, Dr. Skender Luarasi, Dr. Endri Duro as members of U_POLIS and Dr. Rudina Toto and Dr*. Rodion Gjoka from CO-PLAN. The project began with preliminary studies of the condition of the settlements affected by the pandemic and later was detailed in specific studies by international scientific researchers who are part of the joint International Doctorate in Architecture and Urban Planning (IDAUP) that U_POLIS organizes in collaboration with the University of Ferrara in Italy (UNIFE). In this research project, beyond the working group, more than twenty other young researchers at different academic levels gave a scientific contribution via a scientific paper in this volume.

2. Previous experience of the applying Institutions - This project, which comes in

Source/ PhD Programme

cooperation between Polis University and the Institute for Research and Development CO-PLAN, is organized within the joint IDAUP program that U_POLIS organizes together with UNIFE since 2013.

U_POLIS and CO-PLAN as applying institutions have an experience of more than 25 years in the research and development of territorial and urban space. Polis University is an institution focused on scientific and applied research on the inhabited space. The focus of U_POLIS research goes from territorial and urban space planning to research on housing space and architectural or engineering studies related to it . Among the similar works that U_POLIS has carried out can be listed the research and proposals for Durana (2014), Albanian Riviera (2015), When a River Flows (2016), Projecting Shkodra (2017); Prishtina. The new Image of the City (2018); RURBAN SEQUENCES Inquiries on Dropull's states of Liminality (2019); and RETHINKING GJIROKASTRA - Can architecture. and city planning stimulate hope and growth for shrinking cities? (2020).

On the other hand, CO-PLAN has an experience of almost a quarter of a century on research and urban development at the national and international level. There are many research projects at the spatial level carried out by this institute that have resulted in the drafting of many general local plans, but also the publication of research journals or monographies that are directly related to territorial and urban space. The extensive research experience of Co-Plan is documented and can be consulted on the website of this institute.

The framing of this project within the PhD program makes this research include international researchers with an interdisciplinary experience that belong to different academic levels, starting from PhD candidates to academics with the title of Full Professor.

This publication in the framework of the research project provides specific solutions at theoretical and practical level within the field of research on the human environment. The focus of the project is to provide specific solutions at I) Territorial and urban planning

level, II) Biodiversity and Environment conservation and protection level III) Architectural level in relation to Housing and its new forms.

3. Scientific argumentation of the Project - Identification of the problem and the importance of its solution - During 2020 and 2021, millions of people around the world quarantined, isolated themselves, and practiced physical and social distancing . Our lives, families and work have been drastically transformed into what many people increasingly consider to be the "new normal" . People work, study, shop and even get health advice remotely. However, not everyone enjoys suitable spaces for conducting virtual life. While most of the public's attention has been devoted to medical experts and government guidelines; de facto, it is clear that the way we have so far designed and planned our houses and cities has a bearing on how we are facing the pandemic on an individual and societal level. Online reports and scholarly articles on the role of architecture, urban design and planning for post-pandemic life and the city are added daily.
Indeed, there are many fundamental questions to be raised about the societal response to the post-pandemic city, but this research will focus on issues pertaining to the "new" role that architecture and planning and environmental sciences can embrace in relation to the built environment. Architects, planners and city experts seem to be excluded from the expert groups that outline solutions to the current global crisis. This attribute is currently only entrusted to politicians and health experts. However, this is a historic moment where the contribution of architects, planners, environmental and urban experts is much needed in proposing a new agenda for the future state of our living environments.
The use of the word city directly at the beginning of this project is due to exactly what this word reflects. After two centuries of growth in settlements, which, starting from the industrial city, passed to the metropolis, megalopolis (Gottman 1961) or ecumenopolis, it shows its crisis in the world situation affected by the condition of Covid-19. The end of the city was also theorized in Leonardo Benevolo's book (2011) "La Fine della città" but the crises of this ten-year period are still unclear. From here arises the need to rethink and redraw the settlement. In the Albanian context, this crisis of the big city was preceded by the earthquake crisis of September 23 and November 26, 2019. The images of thousands of families, on the one hand, who stand on streets because they could not get into their apartments due to the uncertainty of the constructions accompanied by the impossibility to gather in spaces that are able to guarantee the safety of the community and on the other hand the lockdown as a result of the situation caused by the pandemic, have in common the crisis that is currently investigating the contemporary residence, especially that with metropolitan dimensions.
After the global crisis of 2020, the settlement seems to be in an irreversible transformation. These major transformations affect: 1) the space where people gather, the way they gather and interact (the role of public squares goes from a gathering point to a point where the urban space is contemplated or "space" of interaction such as the telematic square); 2) financial exchanges (it seems like big businesses that are going online are dominating the market economy by overshadowing small businesses); 3) transport of persons and goods; 4) the housing space since it is appearing more and more as a space that tends to contain all the functions inside, where beyond the classical ones, the space for working/creating or even for recreation is added; 5) intelligent city administration; 6) transformations affecting social inequality; 7) the way of feeding or many other aspects. All these transformations necessarily are translated into transformations of the space inhabited by humans.

4. Purpose and objectives of the project - The purpose of this research project is to use spatial interventions as a kind of "vaccine" that is able to stop the degradation of the space of a settlement and prevent possible deterioration in the future. From this point of view, the intervention in space is seen as a kind of "cure" that is able to "cure the diseases" of settlements and the society that lives in these settlements.
Interventions in the space have always had a utopian character. Eduardo Persico (1945) asserts "E non conta che questa sua pregiudiziale sia rinnegata da coloro che più dovrebbro difenderla, o bandita da chi più, vaguemente, la tema: essa resterà, lo stesso, la fede segreta dell'epoca. Sostanza di cose sperate". In this phrase, which became the leitmotif of Italian architects and intellectuals after the Second World War, Persico clearly expresses the panacea character of architecture as an entity that carries and realizes the hopes of the inhabitant. On the other hand, Le Corbusier (1963) states that

architecture is made by happy peoples and makes people happy. The two intellectuals mentioned above show the positive charge that carries architecture, but the one that comes closer to our thought on architecture is the vision of Edoardo Persico. The Italian intellectual considers architecture as the essence of the hoped-for things, but in our vision we go further and consider it as a panacea, as an instrument that solves the problems of the moment but also prevents those of the future.
Based on the crises of the last few years at the national and international level, which have generated a series of new phenomena and needs for urban and residential spaces different from those of the previous period, the purpose of this project is to research on these phenomena and needs and to provide a solution at a spatial level, respecting the preservation of the environment, thus leading the spatial models of the cities of the future.
The objectives of the project go towards the proposal of solutions at the strategic level and at the level of concrete space interventions that are able to solve the problems caused by the crises of the last years. These crises that have caused a series of transformations have received through this publication a series of concrete strategic and spatial solutions. In relation to the above transformations (Point 3), this research project aims to find and propose alternative settelments that respond to the transformations and spatial crises generated by the situations that have emerged in recent years that include the Albanian context as well as the entire world.
These objectives affect three different spheres that are also related to the main focus of the project, which are I) proposals for planning and settlement models II) proposals for the protection and preservation of biodiversity and the Environment, III) proposals for innovative housing models that reflect the needs of contemporary society.

5. Organization of the research project - As stated above, this project begins with the identification of the problems caused by the shock of the earthquake and that of the pandemic. The activities on which this project was based are divided into the following categories:
Theoretical research activities to define the theoretical framework on which this project is based. As mentioned before the project officially started in October 2021 but immediately after the earthquake crisis of November 26, 2020 and the spread of Sars-Cov-2, the theoretical research in U_POLIS focused on facing these crises and providing a spatial response to the created problems.
Activities related to the extraction of the first hypotheses and the definition of the research question (point 6) which will lead to the first proposals on strategies and specific models suitable for the context of the case study,
Activities related to the direct analysis of the case study of the district of Lezhe. The analyzes on the Lezha region began simultaneously with the earthquake and pandemic crises and it was observed that in this region the impact of these crises was so significant that it was able to suggest concrete solutions that can be replicated in other similar contexts.
Treatment at the theoretical level and analysis of the results obtained from the analyzes in the field through concrete proposals at the spatial level on the specific case of Lezha and the transformation of these results into theoretical/practical instruments that are able to be applied in other similar contexts in world level,
Publication of these results in national and international conferences; publication in international scientific journals or in the series of publications issued by U_POLIS and CO-PLAN.
From the operational point of view, the above objectives expressed in point 4 were achieved by relying on the following steps:
A preparatory meeting in October 2021 between the project participants to discuss the collection of information, the state of art, the concrete organization of field visits, the way in which the information would be processed and the theoretical framework.
The determination of the final agenda for the organization of the site visit and contacting local actors to build an academic/administrative cooperation network. In this meeting was decided to invite international academics from the partner university of Ferrara in Italy. It was also decided that the working group in cooperation with the PhD students will meet with local actors and the administrative staff of the municipality in order to be aware about the physical reality of the case study. A few meetings were discussed among the project participants to determine and approve the final agenda of the study workshop that will take place in November 2021. The material and basic information was also identified and shared with the workshop guests and was discussed about

the professional figures that will be invited for lectures during the workshop. In this meeting, it was also determined that the international research workshop would be held from November 8-19, 2021.
A Field visit to analyze the condition of the area and determinate the crucial points and strategic areas with a special interest that present a critical character that requires immediate solutions. The site visit was part of the 10-day workshop where the group of this project collaborate with other guests from the academic and professional fields such as professors and PhD students. The general program of the workshop includes theoretical presentations, site visits and work in the studio to produce the first results.
The workshop focused on three main topics on which three study groups with PhD candidates, PhD and Professors worked together. The first group that worked on infrastructure and facilities was led by PhD Besjana Qaja; the second group worked on environmental issues and resilience was led by PhD. Endri Duro; while the third group that worked on dwelling and Housing issues was led by PhD. Malvina Istrefaj. Each leader prepared an explanatory material for all the research work carried out, which is published at the beginning of the three main chapters that are related to the three main topics. The PhD candidates that took part in this project prepared a research that follows the introduction of the main chapters. All articles have gone through a double-blind review process that guarantees the quality and level of research in this publication.
After the collection of research materials in February 2023, a round table was held with local actors and stakeholders to present and discuss the results of the work done since the beginning of the project. The leaders of each groups and representatives from Co-Plan presented the research done to experts from different fields on Lezha municipality. After this site visit and the discussion with local and administrative actors, the research was oriented towards the implementation of the suggestions received in these meetings. The reflection of the comments and suggestions made by the project participants and from the joint meeting with local actors and stakeholders was held in March 2023. These reflections are included in the final part of the conclusions of this publication.
This publication comes in 300 printed copies and is also available online on the official website of Polis University.

6. Project implementation methodology - From a methodological point of view, this project began with the identification of problems caused by the shock of the earthquake on November 26, 2020 and the critical situation caused by the Pandemic, not only at the national level but also at the international level. The problem identified by these two crises once again emphasized the "stiffness" and unsuitability of the spaces of the contemporary city to face strong crises. The research problem is posed on two different levels. The first has to do with the state of cities to deal with crises and the second with the research of the city spaces of the future that are able to "absorb" and transform in positive factors the shocks of the past.
This research methodology has been used in cases of different settlements in Albania where it was requested to solve different social, economic, spatial problems, etc. In the case of cities like Dropull (Aliaj B. Rossi L. Eds. 2020) and Gjirokastra (Aliaj B. Rossi L. eds 2021), the research aimed to solve the problems of Shrinking Cities and Heritage. The objective has been to stop the advancement of the shrinking of the city and preserve the Heritage through the interventions in the space. While the problem addressed in this publication is the post-pandemic city where as case study is the municipality of Lezhe. The objective of the is to propose coherent spatial solutions with the situation and settlements after the Pandemic situation. The final result of this research are concrete spatial solutions that seek to create a more suitable environment for living in settlements.
What unites these cases that is the innovation of this methodology, which has as a final result the creation of a procedural model, is the concept of intervention in space as a kind of "vaccine" that is able not only to solve current problems but also to prevent deterioration in the future. Here the innovation is translated into the consideration of the intervention in the space as a "cure" that "heals" the problems manifested by the settlement but also increases the "immunity" or resilience of the settlement itself.
Considering space interventions as a kind of "vaccine" able to improve the current situation and to improve the responses of the settlement in the future to the same shocks, the research question of this project is automatically raised. At this point, the research question of this project is related to finding spatial answers that provide solutions to urban problems generated precisely by the transformations (Point 3) and

the crises of recent years. Specifically, the research question of the project is: how should a settlement be, from a territorial and urban point of view, able to withstand major shocks such as earthquakes, floods, fires, droughts, infectious situations both for people and for the chain of life?
In order to answer the question above, the project was divided into several steps that are not necessarily consecutive but overlap with each other.
The first step focused on gathering information at a theoretical level that is directly related to theoretical studies on resilient and innovative cities. Parallel to this step, detailed analyzes were done at the territorial and urban level on the case of the Lezha region, emphasizing the risks and dangers to which this region is exposed.
The second step involved the development of an intensive ten-day workshop in Tirana with national and international researchers. Part of this workshop were, in addition to the members of the research group of this project, were engaged other international guestsand twenty students from the International Doctorate in Architecture and Urban Planning (IDAUP). In this intensive workshop, beyond the analyzes made in the first step, specific proposals were given at the theoretical and practical level that answer the research question raised at the beginning of this paragraph. The workshop entitled "Planning Cities for the (Post-)Pandemic/Crisis Era - Aspects of territorial sustainability and resilience @ Lezha Region, Albania." took place in Tirana and Lezha from November 8, 2021 to November 19, 2021. In the Workshop, three groups of researchers with PhD candidates were led by a group of professors from Polis University coordinated by Prof. Besnik Aliaj and Dr. Llazar Kumaraku, while other lecturers helped every day with selected interventions and presentations directly related to the topic. The participants focused special attention on three main dimensions: i) infrastructure planning and development; ii) Biodiversity and environment; iii) urban space and housing. In the workshop. The current situation was analyzed, including the main threats to a stable and resilient future such as: i) floods and fires; ii) earthquakes; iii) pandemics. During the analysis, other threats were identified and presented in the introductory chapters for each topic. The proposed interventions were based on following the antipole strategy (Kumaraku 2021) used in other urban projects as in the case of the lots led and planned by U_POLIS in the Academy of 100 Villages and in the case of the vision built for the city of Gjirokastra.
The third step of this research focused on the detailed research for the dimensions mentioned above, where each participant in the workshop gave a theoretical contribution in proposing new spatial strategies or models that are able to withstand shocks in the cities of the future. The proposed interventions are based on the new planning paradigms (Kumaraku 2020) where U_POLIS is a precursor to implementation not only in the Balkan context.

7. Results of the project - Regarding the objectives, the research activities and the methodology followed in this project, a series of concrete interventions for the case of the Lezha municipality have been proposed, which have the "nature" of instrumental proposals in all national and international contexts that have a similar character of Lezha. Concrete spatial proposals affect the sphere of the environment, risks and dangers at the environmental and planning level.
This publication presents new proposals for an intelligent infrastructure as well as for new proposals at the residential level, where the highlighted and previously raised issues related to the various risks to which the Lezhe District is exposed are resolved.
The results of the project have been announced by participating in various conferences and other research activities. Beyond this publication that summarizes the research results of all participating researchers, researchers participated in conferences or other national and international research activities, such as the presentation made by Dr. Llazar Kumaraku and Dr. Skender Luarasi held in Lezhe on April 21, 2022 organized by the Ministry of Tourism and Environment and Co-Plan. The final step of this project is represented by this dedicated publication of all the findings made in this project on instruments and new spatial models that are able to respond to shocks received by a settlement.
The publication is divided into several main parts. After an introductory chapter by Llazar Kumaraku and Besnik Aliaj, it continues with the part of interdisciplinary research on the Case of Lezhe. Three big chapters are dedicated to infrastructure and services issues, Environment and Biodiversity and Dwelling and Housing issues. The publication ends with the conclusions and suggestions for the specific case of Lezha and with the emphasis on the theoretical/practical instruments for the transformation of cities into

settlements that are able to withstand the shocks of the future.

8. Stakeholders - The beneficiaries of this project are divided into direct beneficiaries and indirect beneficiaries. Direct beneficiaries of this project are first of all the current scientific researchers but also those who will follow in the future. The second direct beneficiaries is the community of Lezha Region, which has at its disposal a series of concrete instruments at the territorial, urban and architectural level that are able to directly improve the quality of the space and, consequently, the quality of housing and the lives of the residents. Indirect beneficiaries are all space researchers, starting from planners, urban researchers, architects, environmental engineers or even other professional figures who deal with the study of the space.

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SPATIAL PROPOSALS FOR THE POST PANDEMIC CITY THE CASE OF LEZHA

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contents

1.1

Facing the new normal in a Post-Crisis and Post-Pandemic Cities

Besnik Aliaj
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1
Introduction

Facing the new normal in a Post-Crisis and Post-Pandemic Cities

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Background- During the year 2020-22, millions of people around the world had to quarantine, self-isolate, and apply physical and social distancing[1]. Our lives, our family and work have drastically shifted into what many are increasingly calling the "new normal"[2]. People work, study, shop and even get health advice remotely. Yet, not everyone enjoys suitable spaces for conducting virtual lives. While much of the public attention has been given to medical experts and government guidelines; de facto, it is clear that the way we have designed and planned so far our homes and cities has been shaping how we were facing the pandemic at an individual and social level. The web reports and scholar articles on the role of architecture and urban design and planning on the post-pandemic life and city are thriving daily. Indeed, there are so many fundamental questions to raise on the societal response in the post-pandemic city. Meantime, several strong earthquakes hit capital region of Albania leaving behind thousands of destroyed houses and tens of human victims. The incidence of flooding and fires has been doubled and tripled due to climate change. The global economic crisis and the logic of stabilocracy has worsened the situation. On the top of such general instability stay the events of last pandemic crisis and a desperate need for resilient actions. A research team has been working also at Polis University, on such subject, via research at: i) the international PhD program between Polis (Albania) and Ferrara (Italy) Universities, ii) the project on sustainable and resilient planning supported by the national agency AKKSHI, iii) or concussions generated via the scientific debate of "Tirana Design Week" (www.tiranadesignweek.com) TDW 2021, focused in the matters that are specifically pertaining to the "new" role that schools of design, architecture, planning and built environment can embrace in this dynamically evolving context. However, architects, planners and city experts seem excluded by the pool experts outlining solutions for the current global crisis[3]. Yet, this is an historical moment where their contribution in proposing a new agenda for the future condition of our urban environments is much needed. In this frame, Polis University has been aiming at housing a scholar and professional discourse on the following questions:

- What is the nature of (post-) pandemic/ crisis city transformations?
- What urban factors and qualities stand at the core of these transformations?
- In what ways do health and wellbeing intertwine with city-making in a post-pandemic context?
- To what extent COVID-19 will/could alter our understanding of urban space and pertaining life dialectics?
- In what ways will the society operate within urban environments in the future?
- What about our houses, leisure activities, public space, mobility, and work environments?
- What lessons will designers, architects, city planners draw on their role for city making?
- What is the impact in policy-making and decision-making facing physical, economic and political crisis?

- What about the education and research for these professions?

Such questions become relevant while the society is imposed with measures of physical distancing that will eventually impose long-standing social distance; when new perceptions on sanitation and hygiene are emerging; when uncertainty over the strength of the public health system is just increasing; and the welfare of the society seems so depended on vaccination. In short, while we adjust to government guidelines claimed as short-term and of questionable ethics, we can only imagine long-term effects for travel and urban mobility, urban safety, environment, leisure and sports, and social interaction. There is no place for speculation as this pandemic evolves into a common routine of human life or remains an isolated event that calls to our collective consciousness for making cities sustainable. Whatever the case, the city needs rethinking and the urban space needs reinvention.

Facing the "new normal"

In the last few months, we hear of the "new normal"[4], which could become the "actual normal". Obviously, people are concerned of the consequences, which are hard to predict, but possible to shape. Indeed the "new or actual normal" has been spoken of well ahead. Visionaries and scientists, artists and city makers have regularly theorized on the transformative shifts of the society, change of ideologies, or systems. David Harvey has long challenged the weaknesses of the "market economy". Scholars of the 'urban commons' as an ideology, also criticize "neoliberalism" and privatization reforms. While authors of polycentric governance, from Ostroms [5] to Sheila Foster and Chirstian Iaione, have also proposed and continue investigating cases of a new mode of governance, which can mitigate inefficiencies of the public and private. In this quest for the new normal, do we have to go straight towards what we may now perceive as obvious scenarios? Or, as predicted in architecture by Bruno Zevi, following the philosophy of Baudrillard [6] (1976), we should refuse any reassuring solutions and transform crises into "new values", as elements and the reflection of a new possible world and society (Weber, 1920 [7]). On a negative perception, reshaping human interactions we were used to, might end up changing the concept of the relationship and of the sense of physicality, such as touch, engagement, etc. Therefore, new forms of engagement at the physical level would define new post-pandemic proxemics (Hall, 1966 [8]). In a more positive perspective, the current condition could be an invitation to thinking beyond "the stable state" or "the stable normal". This idea persists since the seventies through many scholars, including Donald Schön. He wrote a book in 1973, "Beyond the Stable State" [9], where he argues that we live in a time of loss of stability of the state, which encompasses occupations, interactions, religions, organizations, and value systems that have been already eroded. His words, remind us now, at this very moment, about the need to learn from the current condition and the need to adapt through

learning to a system that is continuously under transformation. It also means we have to become resilient, therefore adapt to face and embrace the future, while being robust to shock (Mäler, 2008; Armitage, 2008; Perrings, 2006)[10]. The concept of resilient beyond the stable applies also to all of us, to designers, individuals, organizations, governments, and communities. It seems that the pandemic has only accelerated the urge to adopt this vision for resilience, which has long been there in the complex discourse on climate change. However, the organisations' and individuals' mindset to change has been rather slow, mostly resting on some form of dynamic conservativism. The pandemic has quick effects and requires rather quick responses, and therefore better capacities and abilities to adapt, appropriate or react quickly to the evolving dynamics. The mind-set of the organizations and institutions must delve into continuous transformation producing change at micro- and macro-scale, and at city level. Obviously, this will require flexibility embedded in everything that designers, architects, planners, and city experts do! Hence, the notion of adaptation – and of "exaptation" (Gould, Vrba, 1982[11]) and the idea of appropriation, is a possible contingent in dynamic situations.

Falling the trap of being virtually halted

To illustrate, travel and transportation are one of the examples of how urban planning and cities are affected by epidemics and pandemics. People who would usually commute to work are now virtually halted in most cities, or have been forced to change significantly their work and lifestyle. As e response to the condition, various modes of transportation are encouraged (Tosics, 2020) [12], while we still rely heavily on public transportation infrastructure. It seems like there will be more incentives for cycling to work, for encouraging walking and dissuasion of large public gatherings within transportation systems and nodes. But then again, what does this mean for the current local, regional and global mobility networks? And, most importantly, what does it mean for industries that inherently rely on travel, such as tourism? The intercontinental flights are not merely about transit trips; on the contrary such travel routes link cities' economies, tourism, entertainment, and leisure, etc., all in need for the physical aspect of globalization. In these conditions, we cannot merely "wait and see"! There is a necessity to oppose the fear and the passive culture imposed by it. There exists a desperate and urgent need to jump into active thinking and projections towards a future of new/alternative models of living. In practical terms, the design and standards of transport infrastructure should change to accommodate the large number of people in constant flows that reduce density instead of creating concentration. There could be limitations and restrictions, as well as emerge of new spaces. This applies to public and private space as well. The retrofit of public space includes more ecosystem services, more space, but also more alternatives of what is considered public space. The retrofitting should extend to buildings to allow for more privacy and hygiene, while people still stay together. It is very important for planners, architects and designers, to move forward with developing new buildings/city standards that will lead new development and retrofitting practices. This retrofitting should look at space, alternated functions and ideas on a new housing role, including opinions on new materials, furniture, and even construction technologies. While aiming to integrate living and working space reflecting users' needs and features, it is also important to avoid thinking of users as 'passive' inhabitants, and consider them active vectors, able independently to appropriate (Dix, 2007[13]) and give new long-lasting meaning to urban space. All this brings us to the fundamental need for understanding "users", their cultural background, age group, social and family dynamics, type of employment, etc. For instance, whether a person is an employee, a manager, an independent professional, or an entrepreneur, it would impose rather different spaces of home environment in relation to her/his work. The space balance for work, relaxation, leisure or family time activities would be different. Hence, in the post-pandemic city such aspects become crucial while new working and living cultures, thus spaces emerge. As mentioned above, new standards are needed, though not being generated yet. We are still grasping the old idea of maximizing the space and give a satisfactory existenzminimum[14] to every individual. However, this is not sufficient in the post-crisis city, where not only pandemics, but other disasters, such as climate change, earthquakes, floods and fires, financial shocks, wars or (cyber-)terrorism, etc. are an eminent threat too. As for design, architecture and city planning, this complexity requires for more than standards, it seeks for a new philosophy of education and execution of

knowledge.

What about the excluded ones?

In this context: What about the poor neighborhoods, slums, informally developed areas, and the excluded ones? Can designers, architects, and city planners play a role in there too, and how does the pandemic affect these communities and settlements, differently than the highly planned environments? At the start of the pandemic, the focus was not on the informal settlements of Latin America, Africa, Asia, or even Eastern Europe. By late spring 2021, there were more and more reports from Rio, Cairo, Mumbai, (including Tirana at our local context), speaking of informal settlements too. Still, there is lack of information about the spread of virus in these "organically developed" living settlements, and there are no records on the numbers of infected people or loss of life. Access to such neighborhoods and access of this portion of the population in the health system are two of the main causes behind the poor information. Yet, such information and the way the disadvantaged are facing or not the pandemic, is an imperative to introducing new targeted methods and strategies, new services, and new awareness campaigns for such significantly large parts of the urban fabric. This requires for collaboration between scientists, people and policy-makers, aiming to establish "new lenses" on the promotion of city-health and livability. Those contemporary challenges we live in should help us produce a new conception of the abused word 'informality', picturing it not only as something 'unexpected' and of 'missing legal and social framework'; but on the opposite, a relational concept at various scales of urbanization, to be tackled holistically (Di Raimo, Lehmann, Melis, 2020[15]). This intertwined relation between health and wellbeing in the city and the city-making process is essential to producing livability. Development in the health sector is often regarded in separation to the living environments, much alike nutrition was for a long time not seen as medicine – perhaps not necessarily a curing one, but definitely preventive. Similarly, health and wellbeing in the city, though not seen yet as critical factors of urban quality, constitute a stronghold in city making. But, why artists, designers, architects, planners and city scientists are not commonly part of the health and wellbeing conversations, when planning living environments? Is this because of lack of knowledge? Because politics and policy-making processes do not see a priority in such relations? Because periphery and informality are not considered as "planned" environments, the way that urban centers are? Is it because of lack/hardship of access to 'closed' or 'ghetto' neighborhoods? Or, is there something else behind we are not aware yet? On the other hand, there are organizations, volunteers or even passionate planners and architects who engage in collaboration with the disadvantaged to introduce basic services and health facilities, improve schools, reinvent public spaces, or even establish sanitation services. However, these efforts are faced with a scale problem, as long as official government support is weak or missing. In addition, in many cases governments usually intervene through demolition or other "instruments of force", not only destroying the trust of the community, but also erasing hope and future. This "improvement-versus-demolition" is a challenge that artists, architects, and city experts need to continue working with. As, Jean-Paul Sartre said in his work "Existentialism Is a Humanism" (1946/1948[16]) "... man is nothing other than his own project ... ", emphasizing that what matters is not the abstract idea of power but the act itself. Through designing and imagining, we project a vision on the world, which allows us to be and to exist. The need for a transdisciplinary approach to city-making is inherently a transdisciplinary process and so is planning for the city. The transdisciplinary approach is already shaping the basis of design and production in architecture too. We spoke already of transport and mobility, of public space, of health and wellbeing, housing, education, and there is so much more to address in city-making. Another phenomenon – that has transformed while the pandemic is unfolding – is the migration. Seasonal work migration was largely affected, within regions and even within states in the European Union, in North America, etc. Refugee routes changed and new restrictions were put by governments, but the phenomenon did not stop. Instead, a new form of migration appeared with the pandemic encouraging people to leave the crowded areas within a city [17] and reside for a while in the countryside or abandoned areas. People escaped from high density, towards open landscapes, perceived safer, more hygienic and supportive to the idea of resilience. We have yet to see the results of such migration, which is not clear to what extent is permanent or

temporary. Same tendency was noticed after the two strong earthquakes of 2019 in Albania, and in Bosnia, Croatia, Greece and Turkey earthquakes along 2020 and further on, which combined with the pandemic situation, busted further the phenomena. Think also of the seventies and eighties, when the hearts of many cities in North America and Europe were struggling with high crime rates and exclusions, due to deserted city centers after working hours. In view of history, could cities again end up struggling with their centers and neighborhoods? Here too, alike with other problems already discussed, planners and designers should look for solutions and new balance between health requirements and the city's need for vibrant social interaction. Again, the need for a "transdisciplinary approach" becomes prevalent. However, the "transdisciplinary effort" has its roots in the education system and approach. The understanding of disciplines and methods to exchange between them stems from the way we generate and apply the knowledge in practice for future generations in colleges, institutes and universities. The existing situation, the pandemics and its effects on the city and society, seem to encourage further a rise of scientific trends that built on transdisciplinary approaches. Clearly, the discourse on the post-pandemic city is not merely anthropocentric, it is a discourse of nature and socio-ecological relations; it is a discourse of values that are beyond utilitarian; and it is a discourse of ethics and morality, not only for this generation, but for the ones to come too.

The need for a "new school" and "new research" of design and city sciences!

The evolution of city sciences and design commences with education. Both, architecture and planning are in a constant need of reinvention. Professionals and scholars may feed their mature thought in city-making, but it is the new generations that will eventually produce change. While there are already interesting and powerful ideas about the evolution of the profession and the respective education, the context evolves quickly and students should qualify into young professionals, able to intervene in rapidly changing societies, with rapidly changing systems, and a substantial load of inherited problems. The young professionals should be capable to grasp and understand problems, sense the future and reconnect people with space, producing socio-ecological synergies that lead to positive impacts on human health and wellbeing. The COVID-19 city is more than ever and in a very short time revealing the need for data, knowledge, and forward rather than backward thinking and response. Clearly, the pandemic has put again people and not the physical artefact into perspective. After all, cities are made by people for people. Obviously, this requires architecture, planning and design studies to focus the research on the dialectic between people and environments. Furthermore, schools should realize that as we do not live in a linear world, we need to align our interests on complexity, referring to the phenomena emerging from dealing simultaneously a sizable number of factors interrelated into organic whole (Weaver, 1948[18]).

Research on Resilient Planning and Design

The issues raised above are not new to city-making, planning, design and architecture. Furthermore, pandemics are not new to human society and cities, and – not to be proud of – the history of response, governance and ethics, seems repeating, while society has not drawn lessons [19]. Yet, what is new in the context of COVID-19, is the intertwined relation between the speed of events and effects on one side, and the growing evidence of city failures on the other. We may say that the complexity of issues has raised to a whole new level. The naturally following question is whether this pandemic has already affected or will soon affect the views of city scientists in a reforming fashion, while we move towards a "new normal". Will the next crisis find us as unprepared as in COVID-19, repeating the same findings over and over again? Or, will we search for how to reinvent our commons city space, streets, public space, parks and green areas, urban furniture, landscapes, leisure areas, commercial zones, and residences? Will socio-ecological interactions within the city change and what does this mean for human behavior versus urban space or city's carrying capacity? Are physical and social distancing there to remain, and if so, how are we to prevent collective "agoraphobia" or any form of "social phobia" from taking place in the future? The future is so uncertain right now, but there is no doubt that health and wellbeing will not only persist, but will also grow in importance in city-making. The role of nature and human engagement with nature will reveal itself as an important normative dimension of planning and design. Humans are threating nature, but ironically enough, in time of crisis, they find refuge in nature. So, rather than act in emergency only, our

need for resilience teaches us that nature, health and wellbeing should shape design, architecture, and planning education now, rather than later. The transdisciplinary character of the profession is only inherent to such an approach. At TDW 2021, we would like to discuss on the post-COVID city and the role that designers, architects and planners should play in the three strands: education, research and the profession. To have a real impact in this context we need to change urgently the mindset, as students, educators, researchers and professionals, to be forthcoming and embrace values beyond utilitarian, to be actors in positively transforming society and habitat. With this in mind, architecture and planning will surely merge socio-ecological values with aesthetic ones, to contribute to the shaping of space in a biocentric fashion. POLIS University (www.polisuniversity.edu.al), with its research and teaching activities, PhD program, projects like those supported by AKKSHI, or practice based arms, such as Co-PLAN Institute (www.co-plan.org) with its applied projects and policy influencing efforts, and Metro_POLIS (www.metropolis.al) with its architectural contribution are currently utilizing these ideas and approaches, embedded in a new knowledge philosophy for our cities. These three institutions in Albania are pioneering their efforts with other scholars, researchers and practice based organization, under "debate platforms" like city and regional biennials, festivals, research activities of "citizens responsible science" inspirations, to delve into the "new normal" discourse, taking a critical design approach, exploring ethics, morality, values, and alternative practices and solutions for the world to come (Bardzell and Bardzell, 2013 [20]). Workshops, open lectures, an international conference with sessions of debates and open ateliers, and other public events will form the agora of TDW 2021, aiming at producing knowledge, tentative answers and ideas on how the society could move ahead towards healthy spaces and wellbeing in the post-pandemic city. We aim to be playfully 'disruptive' (Sicart, 2012 [21]), with projects and ideas that investigate the essence of society's present condition, while developing mental tools that trigger positive change, by mining through problems and employing a large array of research approaches.

Bibiography

See World Health Organisation (https://www.who.int/health-topics/coronavirus#tab=tab_1) and the following sites (1) https://ourworldindata.org/policy-responses-covid and (2) https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker on information and data on the countries policy and social response towards COVID-19 pandemic. The US Cigna survey found that 79 percent of Generation Z and 71 percent of millennials are lonely versus 50 percent of boomers. The data is definitely worrying compared to the average 47 percent of the 2018 and with the fact that the increasing factor was found equally divided among different age groups. (source: "Social Isolation and Health, " Health Affairs Health Policy Brief, June 22, 2020. DOI: 10.1377/hpb20200622.253235)

See: https://www.who.int/westernpacific/news/commentaries/detail-hq/from-the-new-normal-to-a-new-future-a-sustainable-response-to-covid-19.

See https://www.artribune.com/professioni-e-professionisti/politica-e-pubblica-amministrazione/2020/04/ricostruzione-task-force-fase-2-coronavirus/.

Using a literary gimmick, the term was mutuated from Robert A. Heinlein's novel The Moon Is a Harsh Mistress, with a character telling lunar colonists: «[…] I hope you will comply willingly; it will speed the day when I can bow out and life can get back to normal — a new normal, free of the Authority, free of guards, free of troops stationed on us, free of passports and searches and arbitrary arrests». Heinlein, R.A. (1966) The Moon Is a Harsh Mistress, New York: G. P. Putnam's Sons.

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Gould, S.J., Vrba, E.S. (1982) Exaptation—a Missing Term in the Science of Form. Paleobiology, 8 (1), pp. 4 – 15. With the term 'exaptation', we define the co-option of a specific trait during evolution. A trait, which might serve for another function, can be co-opted by the organism to guarantee better survival sciences for the species and the individual itself. The term has been translated in the architectural discipline by the Italian architect Alessandro Melis focusing the practice more on the 'genoma' of architecture and its possibilities.

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Dix, A. (2007) Designing for Appropriation. In Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI… but not as we know it-Volume 2, pp. 27–30. British Computer Society, London.

Often neglected in favour of more well-known careers, the Ukrainian architect Alexander Klein was the promoter of a new design methodology began with the comparison of various types of dwellings, aimed at the determination of objective terms for the valuation of the design quality. Such method, permeated by a strong positivist/rational mind set, as visible today didn't took in account the complexity and uncertainty of our planet as a living ever-changing being.

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According to USPS data, in the US more than 15.9 million people left big cities to move to the countryside or smaller urban settlements. In comparison to 2019, there had been an increment of the 3.92%.

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2
Interdisciplinary exchanges

Community Resilience as an approach: operative tools for the social-ecological sub-system.

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Abstract - *Social resilience, as part of a broader notion of resilience, is becoming increasingly relevant both in theory and practice. It is increasingly perceived as a means to cope with contemporary shocks and driving forces of change, both internal and external to the system. Pandemics, earthquakes, and their side effects related to climate change are among them. Considering these pressures and related vulnerabilities, this paper discusses the community level of social resilience. It proposes qualitative resilient tools, both general and specific, for the benefit of the communities and their members, as for the people living and working in the town of Lezhë, Albania. The latter is considered a case study, in relation to which this paper provides some considerations and suggestions. The list aims to build the resilience of a community, involving, engaging, and empowering its members, considering resilience as an ongoing process. In this view, resilience is more pervasive as a discourse than merely a term, overcoming the risk reduction and management idea towards a more holistic approach.*

Introduction

In literature, the term 'resilience' seems to maintain a continuous research interest over time. According to Google Trends, in fact, in the last five years (March 2017-2022), this term has confirmed a larger number of interactions worldwide than the term 'sustainability' in the 'Books & Literature' category (Fig. 1), with a peak in the period 29 March - 04 April 2020 coinciding with the outbreak of the COVID-19 pandemic.

Resilience is not only to be understood as a response ('coping') to interconnected variables, namely short- or medium-term phenomena such as earthquakes (Toto, 2020) and pandemics, or to so-called slow burns such as climate change (Davoudi, 2019). Resilience is rather intended to be a pervasive discourse, i.e., as a systemic approach useful in providing answers to complex spatial analyses that can be carried out at multiple scales.

In particular, this essay focuses on the contribution of social resilience to the umbrella concept of resilience. This expansion is conducted by considering three simultaneous aspects of human societies, namely persistence, adaptability, and transformability (Folke et al., 2010). Social resilience accepts potential as well as probable internal and external changes in the socio-ecological sub-system, its boundaries and the consequent co-evolution that binds the two terms over time.

Next,some general and specific qualitative tools are proposed in order to build community resilience (Berkes and Ross, 2012; Matarrita-Cascante et al., 2017) as part of the broader concept of social resilience (Wilson, 2015). They place communities at the centre of the discourse through community-based, community-centred, and community-led approaches (Poland et al., 2021), which are potentially applicable in different contexts, from heritage conservation (Fabbricatti et al., 2020) to Disaster Risk Reduction (DRR, hereinafter) (Patel et al., 2017) as for the case study of Lezhë, Albania.

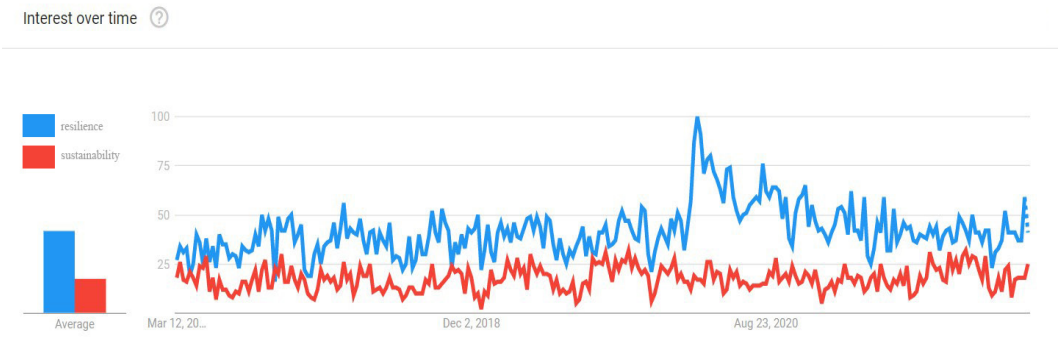

Fig.1 / Google Trends of resilience vs sustainability in the field of 'Books & Literature', worldwide, in the past five years (March 2017-2022). Source /Google Trends.

Potential tools for building a resilient community.

Examples of what the term 'resilience' means from the perspective of its theoretical and practical applications were made explicit by the curatorial project "Resilient Communities" led by Alessandro Melis at the Italian Pavilion of the 17th International Architecture Exhibition in Venice, Italy (May-November 2021). It demonstrated how communities are key actors underpinning any territorial process at different scales, playing central roles from the temporary use of spaces (Bragaglia and Caruso, 2020) to proactive and integrated landscape management (Aimar, 2019; Voghera and Aimar, 2022), for instance. From the literature and the findings of the curatorial project of the abovementioned Italian Pavilion, some general tools for building community resilience can be listed as follows:

-encouraging processes rather than projects that affect mere, discontinuous pieces of the city (Frampton, 1980: 343) (processuality);

-designing and planning for ever-changing life scenarios over time (adaptive processes);

-proposing multiple options and alternatives instead of imposing linear determinism and directionality in choices (redundancy and flexibility);

- moving from linear logic to associative thinking (associative thinking) (Melis, 2021);

- increasing procedural complexity instead of selecting specific administrative and management paths (managing complexity);

- working with communities to define which resilience concept is best suited to achieve their goals (designing consultations);

-defining the most appropriate stakeholders, both as individuals and as groups (framing the community consultations);

- taking into account multi-scalar actions, all to be carried out at the same time (trans-scalar design);

- including all the diversity of the social fabric (social inclusion);

-understanding the socio-spatial structure, the degrees of cohesion in the community, and increasing its interrelationships (social cohesion);

- developing time scenarios on the social practices to be implemented through the planning of short-, medium- and long-term overlapping interventions (stimulating social processes);

- designing in incremental steps to prevent the difficulty of understanding complexity from paralyzing and generating inaction among stakeholders (incremental processes) (Knauf, 2021).

They can be accompanied by specific tools, as listed below:

-detecting and understanding social vulnerabilities, to establish where and how to work to face them (be focused);

-looking for ways to improve the existing system, when and if possible (mitigation and adaptation);

-adopting mitigation and adaptation strategies, plans, and guidelines;

-stimulating commitment and cooperation of individuals and groups through shared visions, imagination, and creativity

Fig.2/ Bottom-up consultations during the processes of defining a new Local Disaster Risk Reduction Plan for Lezha. Source: Municipality of Lezha, and Co-PLAN - Institute for Habitat Development.

(Repetto and Aimar, 2021), to establish adaptation and transition in the long run;
- using technology for more careful and responsive monitoring and/or on-demand interventions, promoting sustainability (real-time feedback);
- planning for more win-win solutions for all the actors in urban contexts, such as nature-based solutions for a climate-proof design of the city (McHarg, 1971; Coaffee, 2019) (engineering approach to resilience);
- planning for buffer spaces both in the city fabric and its public buildings, allowing multiple, customizable uses (Koolhaas, 1995);
- encouraging the government system to foster and support bottom-up practices in decision-making (bottom-up approach);
- responding to local's needs (people-centered approach);
- ensuring capacity building and knowledge transfer in the communities (developing skills).

The case study of Lezhë, Albania, and the contribution of social resilience as an approach.

The town of Lezhë (41° 47' 9.8628" N, 19° 38' 45.8736" E), in north-western Albania, has some specific vulnerabilities, such as high exposure to high-magnitude earthquakes. Following the 2019 seismic event, the national and international allocation of funds for the reconstruction of the affected areas included the implementation of 'soft measures' (Toto, 2020: 18) such as 'empowering preparedness, ... training and planning' (ibid.). Toto also reports that these are, however, 'fully dependent on government support (2020: 18), suggesting that Lezhë has little inherent capacity to respond to external disruptions as a system of systems, as denoted in the Diagnostic Report of the "Ready2Respond" program related to "Emergency Preparedness and Response Assessment" in Albania (The World Bank, GFDRR, 2021: 6).

This could also prove worrying in the mid-to-long term, also considering ongoing global climate change. As pointed out by Bastin et al. (2019), Albania is also affected, reaching a maximum temperature of the hottest month in Tirana that is about 3.5°C higher than the current one, with an average annual temperature increase of 1.9°C by 2050. This change suggests that mere mitigation of the side effects of climate change will no longer be sufficient, as defending the status quo will no further be possible as the only project option.

The above recommends that the social dimension of resilience needs to be strengthened, not only as a functional response to the demands of a disaster recovery plan, but also in building the adaptive capacity of systems in a shared, mature, and lasting way. From this perspective, it would be good to move from the idea of resilience as combined risk management to systemic resilience, where capacity building is a pillar on which social resilience hinges.

The latter seems to be the area where more work needs to be done, not least in light of the recent COVID-19 pandemic, during which the community response was ambivalent. On the one hand, the social network was crucial in absorbing

Fig.2/ Bottom-up consultations during the processes of defining a new Local Disaster Risk Reduction Plan for Lezha. Source: Municipality of Lezha, and Co-PLAN - Institute for Habitat Development).

the shock caused by the outbreak of the pandemic and its initial phases, including the imposition of a national lockdown (March 2020). On the other hand, it proved to be less than robust in its ability to reorganize and innovate in the face of this systemic shock (Adger et al., 2005). Possible causes include a low national and local understanding and managing risk, as manifested in the recent pandemic (2020-ongoing).

Therefore, it is necessary to go beyond the action-reaction culture as a linear response to a systemic shock to promote an open critique of the system itself, thus being able to open up to broader assessments aimed at strengthening its constitutive bases. What has been stated in the previous paragraph could find acceptance in a district-based risk management plan, thus in a more specific and climate-related way than the General Local Territorial Plan in the Municipality of Lezhë (2016).

This could be synergistic with the initiative, already in place, to draft a Local Disaster Risk Reduction Plan for this area, with the support of the United Nations Development Programme Albania and Co-Plan - Institute for Habitat Development (Toto, 2020; UNDP, Co-PLAN, & Municipality of Lezhë, 2020a). This is achieved through active consultation with the local people, carried out by Co-PLAN operators through field surveys, as shown in Fig. 2. This mentioned plan is the local-level pilot of UNDP's "RESEAL Project", entitled "Resilience Strengthening in Albania" (UNDP, 2020b), which seeks, however, to "... support the development of local (municipal) DRR framework and local response capacities in harmonization with the national DRR system and legal framework in place." (ibid.: 4). The process was a citizen-led initiative to 2 reasons; firstly, for the leak of hazard-related data, especially for flood prevention and secondly, to inform the residents about their role in the anthropocentric interventions that emphasize risks and the exposure to them.

Conclusions- Discussing social resilience today from an urban planning perspective seems to require a paradigm shift in urban planning instruments. It is necessary to take into account a multiplicity of factors that include a renewed interest in humanism and the natural world as part of the socio-ecological system.

Community participation is a fundamental part of an effective resilience-oriented design, based on the current and future experiences of the members. Redundancy of data and practices, network connectivity (quadruple helix and multi-layered) and adaptability are among the keywords to be embraced in order to write a monitorable and implementable program that seeks to build community resilience through community input.

To make this happen, there is a need to stimulate critical interpretive thinking to understand the changing needs of society and how it evolves, embracing the co-evolutionary theory of socio-ecological systems. In times such as these, ruled by volatility and uncertainty at the macro level, resilience also appears to be a comprehensive approach to the

more precise allocation of resources at the micro-level, in the face of the threat of reduced investment due to global risk factors, including climate change, pandemics and conflict.
In the specific case study of Lezhë, the conventional top-down coordination system should increasingly provide for a bottom-up contribution in managing and responding to the interconnected risks mentioned above. This will be possible through capacity building of the community members, considering both the initial limitations of this pathway and the subsequent ones that are inherent to the sociocultural subsystem.
Among the limitations, continuous monitoring has to accommodate possible contradictions in public and private needs and resources and overlaps resulting from the application of the new models suggested by the resilience and current conditions in the territories. This can cause difficulties in applying radical and transformative models (so-called 'bounce forward') as they can also reverse socio-cultural structures as well as economic and political patterns embedded in local populations (Diamond, 2005).

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Using digital survey modeling as a critical process of knowledge: Exploring the evolution of Scanderbeg Memorial in Lezha.

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Abstract - *Cultural heritage is an inestimable asset that must be protected, conserved, and valued correctly throughout time. The documenting of built cultural assets is one of the scientific community's major especially in the contemporary age. The goal of this paper is to investigate the evolution process of the Scanderbeg Memorial in Lezha using a critical methodology that includes both integrated digital survey modeling and historical evolution as a process of knowledge and valorization of cultural heritage in order to trace the site's lost sacred space.*

Introduction - The article focuses on the case of the Church of St. Nicholas in Lezha, which was first changed into the Seliminye Mosque under Ottoman rule and afterward altered into the Skanderbeg Memorial under communist rule. The purpose of this study is to examine the connections between the design decisions made for the structure and the liturgical traditions that have been housed within it. It does so by utilizing archaeological evidence from various studies and looking at both the relative and absolute chronology of the building's development.

Lezha is said to have been an important crossing point between the medieval West and the East. The Byzantines, Bulgarians, Normans, and Angevins all left their marks on the northern part of Albania, which is a favored place for circulation and trading. This territory, located on the north-western outskirts of the Byzantine

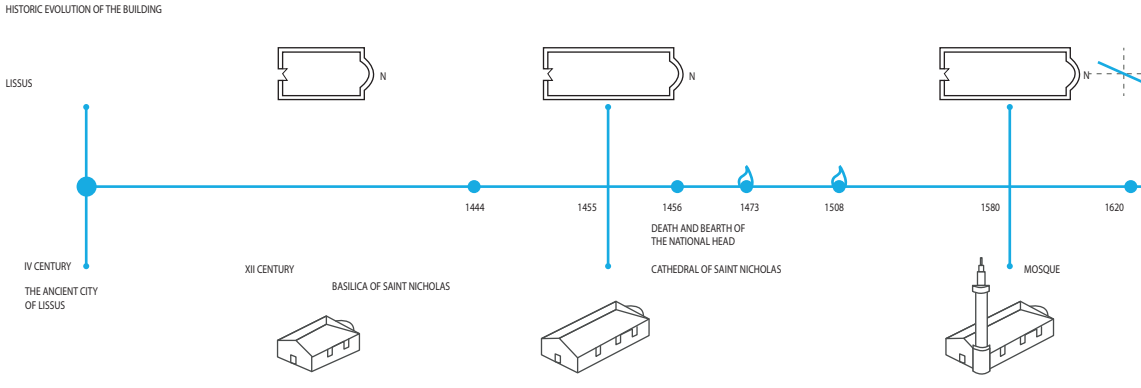
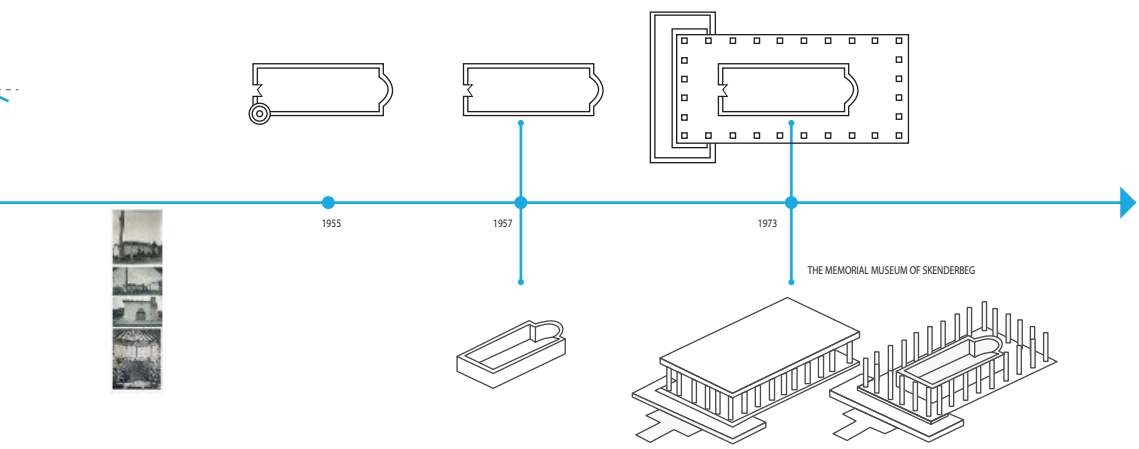


Fig. 1/ Historic evolution of the building, Source Diagram: Author

Empire, on the southern Adriatic, includes mainly the cities of Shkodra (Scodra), Lezha (Lissus), Kruja (Kroon), and Durres (Dyrrachium) (Meksi A. , 1987) (Dhamo, 1974).

2.The Archeology, Landscape and Historic Evolution of the monument

Ancient Lissus, also known as Alessio after the Italianization of the name by the Venetians, is the geographic center of Albania. The Church of St. Nicholas is included in the historical complex that is located within the city of Lezha. Because it is known for the fact that the Albanian hero George Castriot Skanderbeg was laid to rest there, the location has been designated as a national monument. Several different hypotheses regarding the development of the Church of Saint Nicholas' architectural style have been put up. The first one was discovered by an archaeologist by the name of Frano Prendi. He discovered four different occupation levels. A building that dates back to the third century serves as a representation of the early settlement level to the indeterminate function. Before this takeover, the Church had already been through three stages of building. The first building would be an early Christian church, and its age might be determined by the presence of a mortar floor mixed with bricks. This floor could also be interpreted as one that is paved with tiles that are set on top of a bed of lime (Nallbani & Buchet, 2008) (Hoxha, Përzhita, & Cavallini, 2007). The finding of a window post in the south wall of the apse lends credence to the



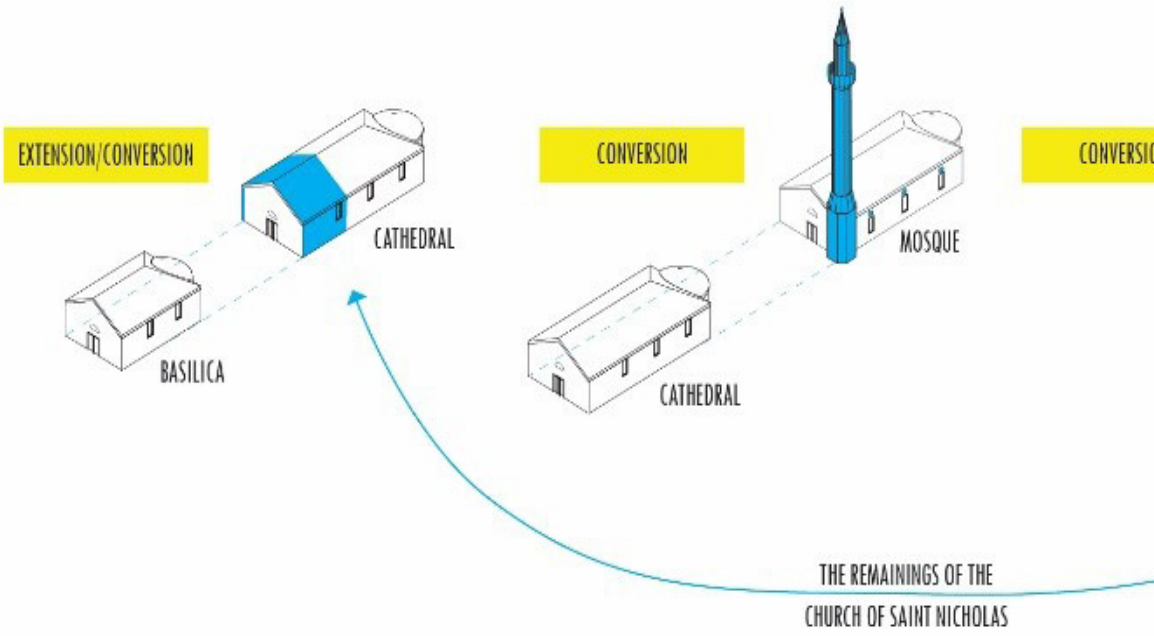
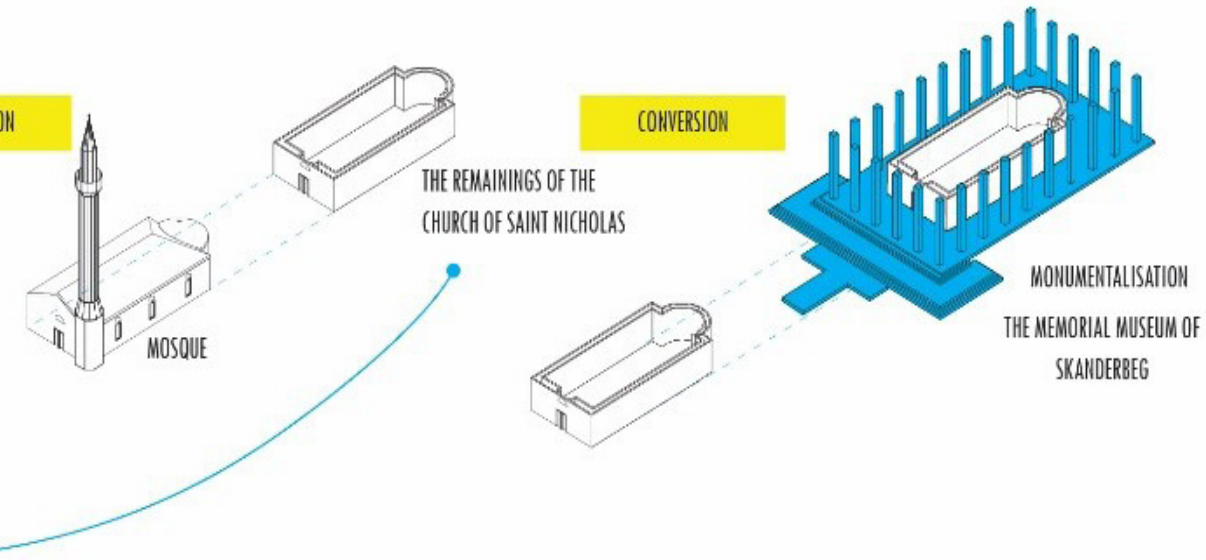


Fig. 2/ Reconstruction of conversion phases , Source Diagram: Author

idea that a second Proto-Byzantine state existed. In conclusion, a final condition would be equivalent to the present-day Church, which was rebuilt in 1457 (Prendi, Ilirët dhe Iliria tek Autorët Antikë, 1965) (Hoxha, Përzhita, & Cavallini, 2007). Recent findings from a study that was carried out as part of Brunilda Bregu's research and doctoral thesis in September 2016 have validated the evolution of the site into four separate states. It is also now able to designate phases and examine architectural developments (Bregu, 2016). The first stage is also the oldest, and it corresponds to the location of the oldest site that is still undergoing ongoing archaeological excavation. The second state can be identified by the archaeological remnants of a church apse that was semicircular and opened into a single nave. The investigation of Bregu has made it possible to suggest a primitive plan for the Church with proportions of 8.60 meters in width and 14 meters in length. Only the departure of the apse has been preserved, with its shoulder making an angle to the south. This is because the masonry of the primitive apse was removed in part from the wall of the current apse, which is located to the southeast. A painting that depicts Saint Nicholas that is still visible covers up some of the stonework that was used in this second condition.

In the year 1457, the Church was primarily reconstructed, which resulted in the third condition. In addition, it was expanded east, west, and north with a new plan measuring 9.40 meters wide and 20 meters long, which resulted in it becoming an aid to the fourth condition, which was when it was converted into a mosque in the year 1575. A minaret was constructed in the westernmost part of the structure, and arched windows with six points were cut into both the northern and southern sides. This new construction in the south is not complete without a mihrab. up until the year 1960, it was displayed in this form.

The renovation and transformation of the mosque into a church began in 1987 under the direction of the Institute of Monuments. The appearance of the Church was intended to be brought back to how it appeared in the 15th century by the implementation of these works, which cover all of the brickwork. The west facade received significant alterations. The minaret was taken down, and the southwest corner of the building was dismantled once more. The collapse of the latter Church as well as the earthquake that took place not long afterward caused an imbalance of the facade, which can be seen as a slope of 30 centimeters between the base and the top of the structure (Prendi, Vendvarrimi i Skënderbeut, 1969). Both the northern and southern sashes of the ancient windows were sealed. During the course of the church's repair project, workers unearthed a section of a cobblestone road that dated back to the late ancient period. This finding demanded support to make the remains visible; hence, other adjustments were done to the building when it was declared a cultural monument. The remains were discovered under the apse. The discovery



of a stone structure measuring 2.85 by 1.95 meters that were found in the heart of the Church below the existing level is of the utmost importance. This structure dates back to late antiquity but does not yet have reliable data (Meksi A. , 2007).
The ruins of a church that dates back to the 15th century have been preserved to the present day; however, it appears that only three arched windows on the south wall of the gutter have been preserved. The photographs that can be found in the collection provide evidence that they were damaged throughout the process of transforming the church into a mosque. Because these windows have been retrofitted into the south wall of the gutter, there is a possibility that they were originally part of a church that was built in the 15th century. This has architectural implications for the building (Meksi A. , 2007).
One of Lezha's last medieval buildings, the Selimiye Mosque, was destroyed by Enver Hoxha's regime together with the rest of the city's mosques. Opponents of the Selimiye mosque managed to bring down its minaret (Meksi A. , 2007).
The building's ornamentations were removed, the minaret was dismantled to improve circulation, and the remnants of the original Church were taken down under the pretense that the building's original design had been reinstated. This was accomplished with the aid of a detailed study outlining the adjustments recommended by period architect experts and archaeologists. During those years, when so many houses of worship were being destroyed, it is puzzling that here, in addition to the destruction of the mosque, efforts were being made to preserve the architecture of the Church of St. Nicholas. Nevertheless, the communist leadership could not ignore the historic significance of the memorial artifacts. As a result, the relic can no longer be utilized for cult purposes, but it may still be venerated as a monument to our national hero's final resting place.
The colonnade built during the communist era is still an important landmark, but unlike the monument, it hasn't undergone any radical makeovers in the previous half-century. Instead, it's only had its marble covering cleaned and repaired as needed.

3. The integrated survey of the Memorial of the National Hero Skanderbeg.

The decision to conduct the survey architecture of the Memorial Museum of Skanderbeg in Lezhe using laser scanning techniques has resulted in a multitude of benefits, including a reduction in the amount of time required for data acquisition and the production of documentation of the museum that is unparalleled in scope. There is not currently any survey that has been brought up to date for the Memorial Museum of Skanderbeg.
We frequently hear about "requalification of the existent" as a turning point for a rebirth of the economy. Following the wild development of recent years, the desire to create from scratch is giving way to a new architectural sensibility that tries to re-evaluate existing places.

Fig. 3 / First Step: Calibration and data collection. Source Photo/ Author, September 2021

Fig.4/ The final point cloud, which contained around 110 million points. Source Diagram / Author

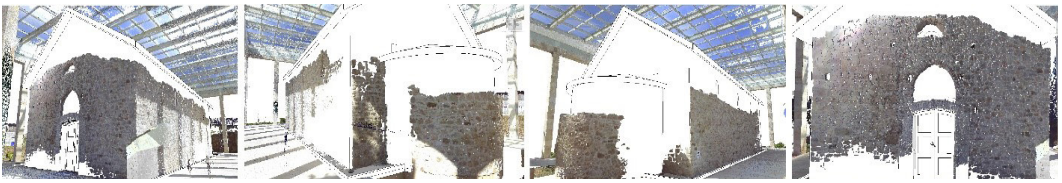


Fig.5 / Overlay of the existing condition and form of the Selimiye Mosque, in Lezha. Source/ Author

The Albanian real estate portfolio comprises innumerable assets of great historical and artistic value that, owing to the present moment of crisis, have not received the care essential for optimal conservation and valorization, and which, in many instances, have been destroyed, closed, and abandoned. Therefore, the use of technological innovations such as the digitization of built heritage has inspired a new modern-day challenge: developing intelligent, efficient, and scalable systems for indexing, archiving, searching, and managing digital collections and related documentation. The spatialization of information based on semantic attributes responds effectively to the needs of documentation and the typical interoperability of interdisciplinary studies, increasing the sharing of resources and the creation of collaborative knowledge.

The FARO Focus3D X 120 scanner was utilized during the laser scanning survey that was carried out. To complete the entire view of the monument, six scans were required, which were positioned in six positions of the object, both inside and outside. Because the monument is an object with a regular shape, the scanning process it took no longer than four hours to complete.

Autodesk's Recap was used to insert and interact directly with the model in an environment cad that makes it easy to navigate and measure through an immersive image, while open-source software Cloud Compare was used to create dwg and three-dimensional models in the form.

Archival materials and images of the monument's primary structures from its two prior stages as a 15th-century church and as a mosque, both of which are absent from the extant object, will be used to generate a reconstruction hypothesis for the last stage of work on the monument. The monument's last phase of construction should be this one.

4. The three-dimensional reconstruction of the monument.

Reconstructing the original appearance of an artifact, as well as the articulation of space and the use of space, in an old artifact that has been subjected to a large number of transformative interventions is always a very complex process. This is especially true when the artifact in question has been altered in several different ways over the course of its history. This third phase, which includes the rebuilding of the monument in three dimensions, is still in the design and development process at the moment. In recent years, there has been a massive growth in the availability of digital technology for conducting 3D surveys of historical buildings and creating virtual models of them. In these kinds of theories, the diachronic perspective, which is intimately related to the developing and complex substance of historical structures, is commonly ignored. On the other hand, virtually reconstructed versions of demolished buildings continue to provide cryptic interpretations, which makes conducting an accurate critical study extremely impossible.

The development of a reconstruction hypothesis of the main structure that is currently in a condition of ruin is the


Fig. 6 / The exterior of the hypothetically 3d models. Source/ Author


Fig.7 / Hypothetically images of the interior of the sacred space. Source/ Author

focus of the final phase of work that has to be done in the museum area before the concept for the completion of the development of a virtual platform can be presented. Restoring the original appearance, articulating the roof, and using the spaces of buildings so old and which has undergone a significant number of transformative interventions is usually an extremely difficult operation. However, reconfigurable hypotheses can be developed if one knows construction logic, can analyze materials, can draw historical analogies, and can compare sources. The production of reality-based models provides basic support for metric, geometric, and colorimetric analyses of the current state of these structures. It is possible to obtain accurate indications from these analyses, even from faint or partial traces, as a result of the information obtained from these analyses.

Traces and photographic evidence were sufficient in the case of the Skanderbeg Memorial in Lezhe, thus an initial possible image could be created from them. These digital models offer the benefit of being able to reproduce objects at any time and verify hypotheses in almost perfect three-dimensional, in addition to allowing for dimensional comparisons with similar structures or conducting analyses of their proportional schemes (especially through their digitization and the production of traditional two-dimensional representations). This is possible because of the model's ability to produce traditional two-dimensional representations.

However, taking into consideration the alterations that the structures have been subjected to means that the comparison cannot be limited to the state in which they are currently found. Instead, the contribution of the historical documentation that is currently available is required to correctly interpret the remains. The strategy, which will be provided below, has been utilized in the case of the structure that is present in the case of the Skanderbeg Memorial and the Church-Mosque in the Rozafe castle; nevertheless, it can also be useful for other situations that have been researched during the course of this research.

5. Conclusion

Current tools for the digital three-dimensional representation of spatial forms provide a useful resource for the study of architectural history. The given digital representations are very informative in terms of geometric precision, morphological richness, metric precision, and colorimetric correctness since they are proposed to be discretized replicas of the original artifact. Validating the knowledge that is validated by the architectural documentation requires a large quantity of information from a variety of sources, including data in three dimensions. One of the key motivations for writing this essay is to collect data and record the principal case for research that meaningfully depicts the evolution of the Church of Saint Nicholas.

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Fig.8 / Memorial of the National Hero Skanderbeg. Source/ Author

Summary of Findings from the Evaluation of the Current Periphery Building Environment for Lezha City's Future Vision.

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Introduction- The city of Lezha has been traced along the Drini's riverbanks since antiquity, not far from its estuary. There are two different hills to the east of this territory, each with ruins of historical defences. Lezha's historical role as a well-fortified harbour was characterized by its geographical location. It has always been separated into two parts, the upper and lower city, due to its location.

As a result of uncontrolled urban development after the 1990s and the phenomena it brought as a result in the territory, such as urban dispersal, extinction or damage to public spaces, construction in areas of sensitive natural and agricultural lands, as well as the endangerment of specific ecosystems, harmonization of sustainable urban development, appears to be necessary as a priority action. Sustainable urban development attempts to provide a high quality of life for all residents and users in urban areas by providing public services that meet certain criteria.

The plan establishes the norms, conditions, and necessary criteria for development and well-being through hierarchization, consolidation, specialization, and centre regeneration, ensuring the construction of sustainable communities and the preservation of cultural and traditional values.

Lezha, as the region's most developed metropolitan centre, has a degree of morphological complexity. The presence of the river and territorial topography, on the other hand, are city-forming elements that have shaped its morphology. The city, logically, chooses to develop linearly in the straits formed by the river and the hill radius and to expand in a funnel-shaped pattern on the plains. The train station on the western part of the river sets the tone and demonstrates the potential for the city to split into two functional poles, but the eastern side of the river looks to be the most articulated at the moment.

An architectural identity in terms of the perception of Lezha city

In time, neo-rationalism, minimalism, and other comparable tendencies (all of which have formal laconicism) create a communication aesthetic. The employment of archetypes and decor scales outside the framework of the time was due to references to classical or neo-classical components. The usage of formal and aesthetic cues from other cultural and historical settings is likewise discouraged.

Regarding the materials for the façade, there are encouraging coatings with natural or composite elements (tiles/ panels), whereas the use of plain plaster is discouraged. Due to the lack of connection with the existing context and landscape of the historic region, as well as its rapid degradation, paints in neutral tones such as white, beige, grey, and similar tones are recommended when using plaster facades.

The city's new development regions are in the heart of the metropolis. They develop the southern half of central Skanderbeg Square in particular. The town hall is positioned in the eastern section of the plaza, while the river Drin flows through the western part, creating a landscape with significant urban potential in connection to the city. The silhouette of

Fig.1 / The actual state of the boundary zones. Source/ Google Earth

the castle of Lezha, on whose foundation the city is created, is equally interesting for the city's image.

Both zones are defined by the city's primary movement axes. Aside from actual structures, the occurrence of expansions is highly common, as seen in practically every community housing. Buildings, scenery, and public space are all deteriorating, in addition to the formed urban framework.
During the socialist era, traces of urban forms were mostly read on which construction forms were built in an unconstrained manner to consolidate texture and height amplification of the urban silhouette.

The aesthetics of the reinforced concrete frame
With the exception of unstable buildings and temporary dwellings, these items are built to last; they have a variety of features, but the fact that they are produced with reinforced concrete framed structures is a common denominator.
Many of them are bare and faceless skeletons waiting to be inhabited, ready to be closed, covered, shielded, softened, and enriched, old building sites, abandoned wrecks, and ruins that have never been inhabited. Overall, they create a distressing situation, almost recognizable in their ugliness, that speaks the same language as modern industrial landscapes, with their rough osteological character and skyline of visible rebars.
These houses could be perceived as a hybridization of the Maison Domino if viewed via the architect's critical lens. Apart from the basic motions of excavating, fencing, and covering, Le Corbusier attempted to elevate aesthetically the operations that man makes to live: erecting and closing frames, typical of lightweight construction, were identified as the most symbolic of modernity. Due to the gap between acts of support and enclose introduced by new technologies, vital elements may become great in accordance with modern man's sensibility and manner of existence.
Le Corbusier was against "paralyzed plant" masonry, which he considered hard and inflexible, and he demonstrated how a house prototype for the future, the Maison Domino, could be regarded as a system of slabs similar to trays on which to freely articulate spaces. The liberation from the limitations of the base and roof, the formal freedom of the facades, and the flexibility of the inner spaces were all considered great successes of modernity, all of which were influenced by the usage of the concrete frame.
Aware of inherited culture's irreversible crisis and the urgency of the "home of their own time," Le Corbusier saw the "machine for living" as the materialization of a standardized prototype, almost a return to the "architecture without architects" of the past, which was powered by the common sense of living. However, he was aware of the persistent persistence of an archetypal formal world in the concept of home, which is linked to places, climates, and cultures. The Maison Domino, which distinguishes itself in a variety of ways, might serve as a foundation for local

Fig.2 / The actual state of the boundary zones. Source/ Google Earth

quirks. The Maison Domino was also a unit that could be repeated in a complicated set of forms, a "tessera" that could be used to create vast multi-family groups or even cloth. In today's suburbs, the skeletons of that generous vision are only skeletons blocks waiting to be gradually closed, like beehive cells: a principle of space appropriation, however, that Le Corbusier approved and declined in many of his ideas.

Regarding the current periphery building environment, the table below are demonstrating four different locations of four representative building typologies that follow the perspective view of the and cultures. The Maison Domino, which distinguishes itself in a variety of ways, might serve as a foundation for these local quirks.

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Regarding the current periphery building environment, the table below are demonstrating four different locations of four representative building typologies that follow the perspective view of the Domino system. For each of them is given some technical aspects from the number of floors to the functionality of the building and also the technical system sketch.

Several distinctive elements of the Albanian territory have been identified based on the process of people's free mobility, the shape and level of informal developments, as well as their spatial and building features. During the communist period, the house was subdued owing to a lack of sufficient revenues; however, during the liberalization phase, the house was re-dimensioned in spaces much larger than the necessities, thanks to family remittances. The quality structural materials are mostly achieved in a chaotic morphology, in the form of villas, as seen from an undefined and inconclusive perspective.

Across the peripheries of Lezha county, mute concrete skeletons are a typical sight. They come in a variety of shapes and sizes, eliciting feelings of abandonment and despair in some situations, but also a sense of something missing, a desire for atonement, anticipation, and hope in others. This concrete skeleton isn't completely inelegant; in fact, it has an intimate sense of proportion that lends it respect, a sense of pride in its undeniable presence in the Albanian countryside as it flows toward the sea, without revealing any particularly identifying or characteristic aspects. It appears to be well constructed. It also shows some foresight: the external structure to the right is half the breadth of its counterpart, allowing for future extensions without having to change the proportions of the rest of the construction. The structural frame appears to be solid, and the columns appear to be strong. Following an initial examination of the structural frame-infill subject, which

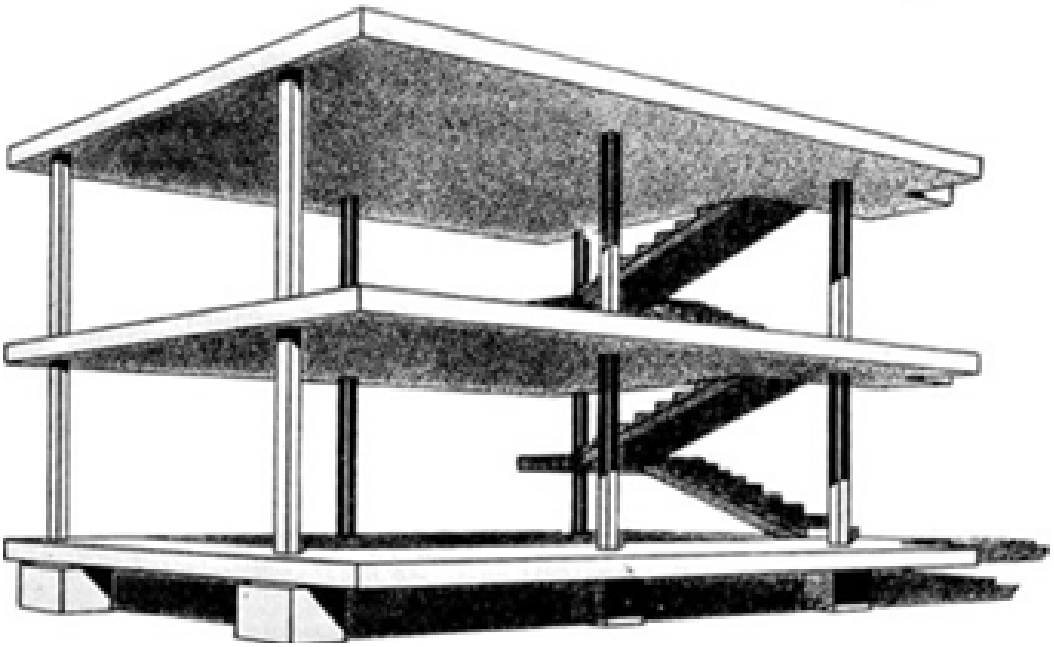


Fig.3 / Perspective view of the Dom-ino system, 1914. Image from Le Corbusier & Pierre Jeanneret, OEuvre Complète Volume 1, 1910-1929, Les Editions d'Architecture Artemis, Zürich, 1964.

contains several well-known instances, it can be noticed the quest for a scale that respects the building's overall proportions. It can also be recognized as an attempt to define an articulate envelope in stages, with the goal of renewing the structure without disowning it, instead enhancing its perception and recognizability through transparency.

An emphasis on the vulnerability of the built environment

A variety of approaches, ranging from sophisticated probabilistic quantitative analysis to qualitative analysis, are being used to study a built environment. There is no "best" model to apply; instead, the best model should be chosen depending on a variety of considerations, such as the stakeholders involved, the severity of the issue, and the availability of data. It is more crucial to properly analyze the built environment to determine the level of vulnerability, which roughly indicates the degree to which specific buildings or areas are susceptible to being affected by a potential future event (seismic, flood, landslide, etc.) causing a disaster.

The goal is to gather relevant data in a qualitative and/or semi-quantitative manner to characterize the risk, which can then be used for a variety of decision-making purposes by authorities and specialists, or even communities on a local territorial scale. This is done in light of the fact that Lezha is vulnerable to many natural hazards, particularly earthquakes and flooding, bearing in mind that it was hit in 2019 by a powerful earthquake.

Since each structure responds to an earthquake differently, it is important to carefully examine each building's performance using the appropriate methodology, and depending on the findings of the evaluation, appropriate reinforcement measures must be adopted when necessary. It is essential to categorize buildings based on their construction period, material quality, and structural systems in order to do this. In addition to classification, it is essential to have maps with PGA and geological configuration values. Based on the thorough approach the purpose is to provide an overview of the collapse mechanism while taking into account their structural system.

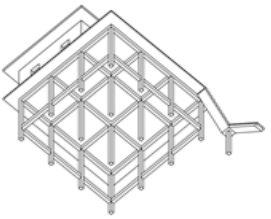
Conclusions and Recommendations

Only visual inspection was used for the evaluation, and site visits and examination of images and photographs were also used. Following are some of the interventions and actions the municipality can take, taking into account the aforementioned results and recommendations:

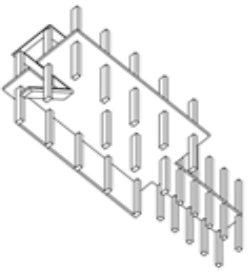
1. The construction of a database with many crucial facts about the buildings. This database should contain data in the form of tables, graphs, and particularly maps that provide a thorough overview of the buildings in terms of their structural typologies, construction dates, and potential existing interventions for performance upgrades.

2. To achieve the establishment of the database and reduce the risk imposed, it is crucial to use structural engineers with specialized training.

1. Dajç, Lezhë, Albania
41° 54′ 9″ N 19° 36′ 21″ E
floors: 2
function: residential / storage
state of occupation: abandoned
built-up area: 72,1 m2
distance from the coast: 10 km



2. Kallmet, Lezhë, Albania 41° 50′ 47″ N 19° 38′ 33″ E
floors: 2
function: -
state of occupation: abandoned
built-up area: 99,18 m2
distance from the coast:
4 km



3. An assessment of the danger presented to each of these structures by a future earthquake can be given based on the data from the database and the advanced analysis described in the methodology at the beginning of the report. Instead of post-earthquake interventions, a pre-earthquake evaluation might be carried out. These decision-making authorities will be informed of this risk.

4. Even the Lezha municipality may find it useful to consider the expertise New Zealand has to offer when determining whether or not a structure is earthquake-prone. The engineers employed by the municipality must carefully determine the percentage of these buildings that are regarded as earthquake-prone (34 per cent for New Zealand). This percentage is significant since it has a direct impact on the economy. After the results are acquired, the building needs to be adequately upgraded within a certain amount of time (in case intervention is required). The municipality's council sets the time, and if the owner doesn't make the necessary improvements, the item will be demolished.

5. The buildings in the examined region are similar in terms of building age and building typology. There are mostly brand-new structures that are no older than 20 years old, including cases of masonry buildings as well as frame-reinforced concrete structures.

6. The majority of the zone is built along the road axis, making it easy for people to use infrastructure and reducing danger because entry is quick in an emergency. However, certain sites are a little more difficult to get to due to their mountainous terrain.

7. To account for the complex nature of urban and non-urban systems, it is crucial to combine information on a building scale with additional data characterizing the surrounding built environment (infrastructure and open space). Such a link is crucial both during the crisis and in the long-term aftermath of a disaster.

8. One of the simplest and most understandable ways to display the data is through mapping. Various stakeholders, including municipality specialists, engineers, and planners, as well as the general public, which is the major stakeholder because it would be most directly impacted by these potential disaster scenarios, may easily interpret and understand such information. Information, perception, and education are essential for preventing losses and getting ready for upcoming events.

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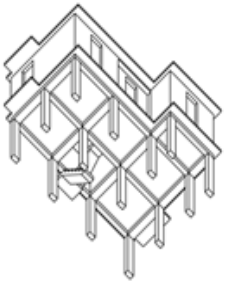
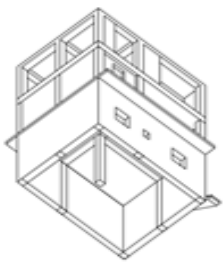


3. Shëngjin, Lezhë, Albania 41° 45′ 19″ N 19° 38′ 28″ E
floors: 2
function: residential
state of occupation: work in progress
built-up area: 79,36 m2 distance from the coast: 3,2 km



4. Lezhë, Lezhë, Albania
41° 47′ 9″ N 19° 37′ 39″ E
floors: 3
function: residential /storage state of occupation: Abandoned
built-up area: 75,6 m2
distance from the coast: 1,4 km

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3
Proposals for planning and settlement models.

Infrastructure: Proposals for planning and settlement models connection and better access development in the Lezhë region.

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Abstract- T*he organization of rural settlements is an important measure to cope with rural decline and to improve the quality of life and rural attractions, tourism, assets, natural resources, etc. This study tries to analyze and present the relationship that these settlements have, what are their assets and values, and in what way they can be more connected and have permanent communication and access.*
Rural areas in the Lezhe region have experienced a rapid depopulation in the last 30 years, accompanied by rural-urban migration. This extraordinary transition has caused a series of negative consequences, requiring a reorganization of access and interaction of rural settlements, to increase their economic efficiency, promoting agrotourism and local production.
In the continuation of the study, he takes into account the objectives of adaptability, compactness and local connection under the control of territorial limitations.
The main goal of our work is to improve the infrastructure as an important tool in relation to the development of tourism and agro-tourism, taking into account the growth of the population of Lezha in the projection based on the data from INSTAT.
The main ideas for improvement are based on expanding the information area of the "Rana e Hedhun" bicycle path; Connecting the most remote settlements with improved rural infrastructure and identifying natural areas that can be used for agricultural and tourist purposes.

Introduction- Lezha Region is a strategic area for Albanian tourism development for several reasons: firstly, the infrastructural connections with neighbouring countries, especially with Kosovo and Montenegro; secondly, the Kune Vain natural reserve, one of the most relevant in Albania; then, the presence of significant cultural and culinary heritage sites connected with the country history; and finally, the recent development of Shëngjin, one of the crucial seaside tourist destination in Albania. Nevertheless, nowadays tourism in this region is concentrated only during summer and focuses mostly on the seaside and this creates several consequences on the economic, natural and social levels.
Lezhe Municipality is composed of 10 administrative units which manage several villages, starting from Balldren, Blinisht, Dajç, Kallmet, Lezhë, Shenkoll, Kolsh, Shengjin, Zejmen and Ungrej. Each administrative unit has its resources, which are mostly related to agricultural-livestock production, viticulture and horticulture. In the central part of the municipality passes an important infrastructure such as the railway network, which currently only transports products and is not functional for passengers. This railway network has a very strategic connection with the state of Montenegro through the Hani Hoti border point. Also, parallel and sometimes combined passes the highway which connects the north of the country with the central part, continuing to the south. The road network in the municipality is mainly distributed in the western part, which is most favoured by the terrain conditions and plains.

This contribution aims to provide tools for urban planning with two objectives: developing a more sustainable agrotourism during the summer and fostering alternative tourism during the rest of the year. To achieve these goals, it is essential to develop existing infrastructure and to build new ones, to facilitate mobility, accessibility and connectivity of the settlements mostly for them that are located in the eastern part of the municipality.

Methodology

The methodology applied in this contribution was characterized by two phases: the research phase, composed of field research, observations, and interviews with local authorities; and the analytical one, characterized by the infrastructural, settlement, morphological, hydrographic and cross-cutting analysis.
Considering the objectives, this paper identified four main areas of intervention: Infrastructure seaside, agrotourism, naturalism and culture.

Analysis

The main seaside issues are related to the traffic reduction between Tirana and Lezha as well as the enhancement of Shëngjin accessibility. To mitigate these problems, it will be crucial to restore the railway for commercial and civil purposes on the route between Tirana and Lezha and to develop a cycle path to promote sustainable mobility in the section between Lezha and Shëngjin.
Regarding the agritourist area, the main problem is the lack of connections between mountain small villages and the Zadrime site. A possible solution could be to introduce train stops in the Zadrime plain to make those areas more accessible for the tourists and inhabitants coming from Tirana and Lezha. Moreover, this could be facilitated with the creation of a widespread road network to improve goods trade and cooperation between local farmers and agritourism, and to make this area enjoyable for tourists.
Deepening into the cultural heritage areas, the most important concern regards the lack of alternative infrastructural connections to access and promote local cultural sites. The railway activation could represent a way to increase the efficiency of the communication between Tirana and Lezha and between Lezha and the historical settlements of the piedmont areas. Furthermore, to integrate cultural and seaside tourism it could be important to connect Shëngjin with Lezha through a cycle path. Finally, these infrastructural solutions could be integrated with a series of artistic interventions to enhance attractiveness and promote cultural tourism during the whole year.
On the side of naturalistic tourism, relevant concerns are the preservation of protected areas and the integration of naturalistic tourism with the rest of the region's activity. A cycle path from Lezha to the Lagoon could be decisive to reduce the use of cars in the protected areas without negatively affecting tourist accessibility. For the same purpose, also a panoramic cycle path from the lagoon to Shëngjin could be an opportunity. Another relevant naturalistic area is situated in the North-

Fig.2 / Hurdha me Shkallë. Source / Flori Nikolli 2016.

Fig. 3.1/ Fishte village and railway line. Source / Author

East of the region. To make this mountain area more usable it will be crucial to improve the railway path in the piedmont area and to develop a series of trails for trekking and tracks for bike tourism.
Taking into consideration the relevance of the region, the forecast regarding population growth and tourism development, a deep rethinking of the region's infrastructural system is needed. These new investments have to deal with the four areas outlined above to promote tourism attractiveness, environmental sustainability and inhabitants' quality of life.

Improvement of existing tourism Infrastructure

Seaside Area, Issues

- Traffic reduction in the intersection at the entrance of the city Roundabout
- Enhancement of Shëngjin accessibility
- Demand for safe and low-impact mobility (difficult access to public transport during pandemics)
- Making public transport safe, efficient and attractive (both for locals and tourists)

Solutions:

- Restoration of the railway for commercial and civil purposes
- Reactivate the railway to increase the communication between Tirana and Lezha and between Lezha and the piedmont areas: safety measures, high frequency, especially during the summer and art interventions ("art train")
- Development of a cycle path to improve and promote sustainable mobility in the section between Lezha and all the areas nearby.
- Improvement of the road signal and tunnel construction
- Blue corridor

Cultural Heritage Areas, Issues:

- Lack of connections to access and promote local cultural sites
- Increase the quality of life of the locals
- Promote cultural tourism during the whole year
- Difficult access to public spaces during the pandemic
- Mitigate contagion risks
- Preservation of cultural and natural heritage (raise awareness)
- Increase participation (denied during the pandemic) and involve locals

Solutions:

- Connect Shëngjin with Lezha through a cycle path
- Artistic interventions to enhance attractiveness and promote cultural tourism during the whole year (squares, bus stops, along cycle paths...)
- Introduce a network of public spaces in the intersection between the cycle path and the Drini river
- App that monitors touristic sites' crowding levels and provides cultural information
- People can suggest significant places to be added to the app

Agro-Touristic Area, Issues:

- Lack of connections between mountains, small villages and the Zadrima site.
- Reduce daily commuting to Tirana and foster the possibility for more people of Lezha and Shengjin to live there also during the winter

Fig 3.2 Fishte village and railway line. Source / B.Qaja 2021

▪ Promote housing in rural areas
Solutions:
▪ Introduce train stops in the Zadrima plain to make those areas more accessible;
▪ Creation of a widespread road network to improve goods trade between local farmers and agritourism and to make this area enjoyable for tourists.
▪ Implement hubs encouraging remote and co-working

Naturalistic Areas, Issues:
▪ Preservation of protected areas
▪ Integration of naturalistic tourism with the rest of the region's activity
Solutions:
▪ Creation of a cycle path from Lezha to the Lagoon to reduce the use of cars in the protected areas
▪ Panoramic cycle path from the lagoon to Shengjin
▪ Improve the railway line in the piedmont area and develop a series of trails for trekking and tracks for bike tourism

Recommendations
Development of an alternative model of tourism focus on 4 main zones and main villages for each zone.
Development and connection of zone no. 1 (with the main focus on the production of the vine):
- Kalivac: The village is located in the administrative unit of Ungrej, and has as a feature the production of viticulture and grapes.
- Kashnjet: The small village in the mountainous part of the municipality that has natural resources like Lakes, and cultural like churches.Ungrej: small village rich with trees, old buildings and natural places,
- Ungrej: A small village located on the road Lezhe-Kalivac, in the hilly-mountainous part in the eastern part of the municipality of Lezhe. Favorable for the creation of recreation and camping areas.buildings and natural places,
- Fregen:

Development and connection of zone no. 2 (Zadrima agriculture):
Fishtë: agro tourism, some of the best restaurants in Lezha, beneficial for development of bio and organic food, touristic village.
Kallmet i Madh: it's an old town, is *characterized by old archeologic findings that prove the old civilization of this village, in this village some characteristic that divide it from others are: dressing of the girls, agriculture, for bio products, some religious places, and for wine production.*
Blinisht: Blinisht is located in the Zadrima region. The region has been subordinate both the Roman Catholic Diocese of Lezhë and Roman Catholic Diocese of Sapë.
Dajç: It has an agricultural-based economy, with many producing fields, but in need of better mechanics and organized market. People of this region are called Zadrimorë, from its field name 'Zadrima' stretching from Shkodër to Lezhë cities. This region has a very rich cultural tradition. Livelihoods of the people are mainly field work, growing crops including grain and vegetables, foraging, arboriculture (figs, plums, and pears), and some vineyards. With the new main highway, SH1 / E762 running by the village South-North from Tirana to the Montenegro border, trade and

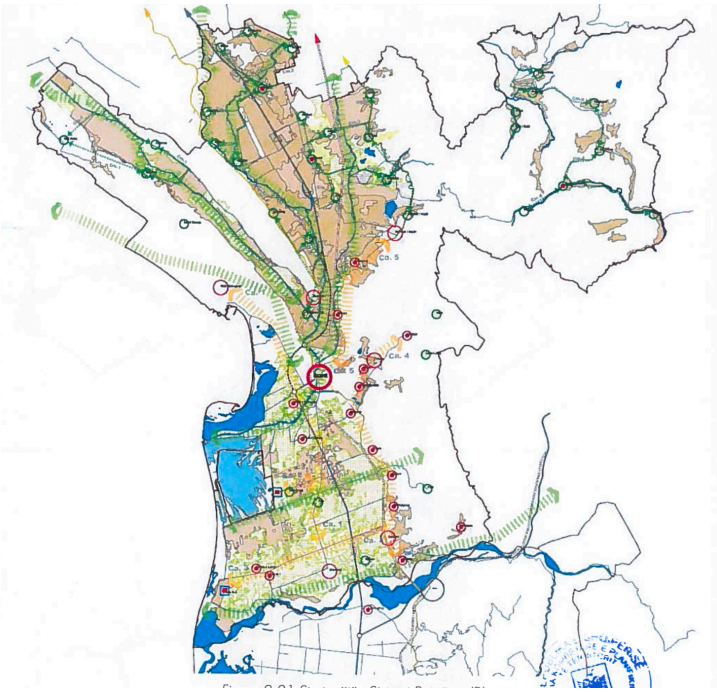

Fig 4 Strategies of agricultural system, Source / Lezha Municipality 2017

economical development is expected to thrive in the coming years. There are many new houses being built everyday, and the face of the town in changing continuously.
Balldren: The name comes from the Albanian, which means "in front of the Drin". In Latin and later Italian sources, the town was known by the names Blandin or Baladreni.
Gocaj: It is a village in Lezha and part of the Balldren administrative unit, which focuses on agriculture, and production, family farming.
Gjadër: It is located in the western plain of the municipality and part of the Dajç administrative unit. It is known for the former military air base made famous during the Cold War.
Pirraj: It is a settlement located in the plain part of the municipality, and near the interurban road Lezhe-Shkodra. It is a small village dedicated to agricultural production.
Gramsh: Gramsh is a settlement in the Lezhë County, northwestern Albania. It was part of the former municipality Dajç.

Development of zone no. 3: Lagoon Villages
Making the "Lagoon Villages" usable to tourists and researchers
Ishull Shëngjin: It is part of the administrative unit of Shëngjin. Located near the lagoon of kune vain.
Barbulloj: It is part of the Kolsh administrative unit, located in the western part of the municipality near the kune vain tale lagoon. There is potential for the use of agricultural land and fishing in permitted areas.
Gryk-lumi Shenkoll: it is a small village in western part of the municipality, focused in agriculture and fishing.
Tale: It is a seaside resort town, part of the former municipality of Shënkoll in the Lezhë County in Albania. Its beaches attract many tourists, especially with the increase in small local hotels.
Gajush: It is located near the river Mat, in the south of the municipality favored by the fertile lands of the river.

Development of zone no. 4: Protected area
- Velë
- Kaçinar
- Kolç
- Tresh
- Spiten
- Markatomaj
- Zajmen
- Berzanë

The organization of rural settlements is an important measure to cope with rural decline and to improve the quality of life and rural attractions, tourism, assets, natural resources, etc.
This study tries to analyze and present the relationship that these settlements have, what are their assets and values, and in what way they can be more connected and have permanent communication and access.
Rural areas in the Lezhe region have experienced a rapid depopulation in the last 30 years, accompanied by rural-urban migration. This extraordinary transition has caused a series of negative consequences, requiring a reorganization of access and interaction of rural settlements, to increase their economic efficiency, promoting agrotourism and local production.
In the continuation of the study, he takes into account the objectives of adaptability,

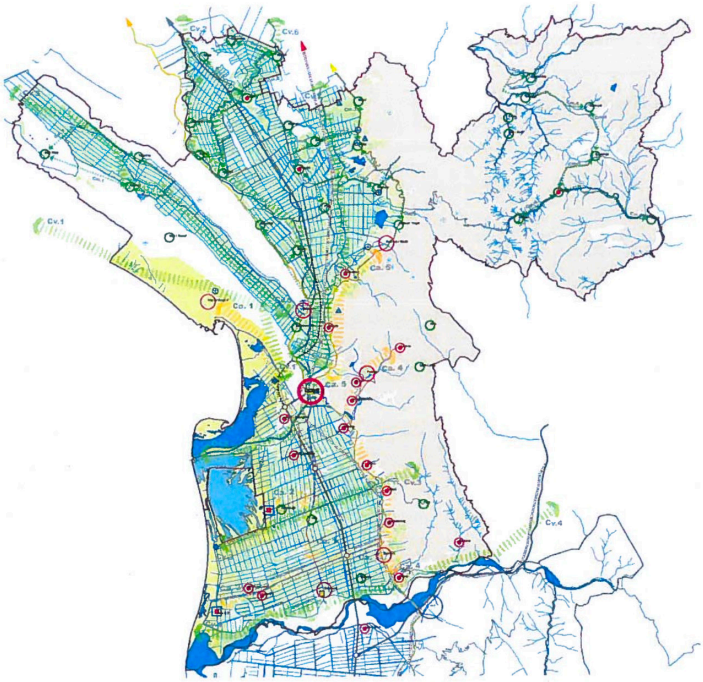

Fig 4 Strategies of water system, Source / Lezha Municipality 2017

compactness, and local connection under the control of territorial limitations.

The main goal of our work is to improve the infrastructure as an important tool for the development of tourism and agro-tourism, taking into account the growth of the population of Lezha in the projection based on the data from INSTAT.

The main ideas for improvement are based on expanding the information area of the "Rana e Hedhun" bicycle path; Connecting the most remote settlements with improved rural infrastructure and identifying natural areas that can be used for agricultural and tourist purposes.

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Smart road infrastructure: Shaping the future of Shengjin accessibility.

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Abstract- *Albania is a strategic area in terms of tourism, because of its unspoiled beaches, cultural heritage, mountainous landscapes, connection with other countries, etc. Tourists suffer from the lack of smart infrastructure in Albania, which makes them face with traffic congestion during summer, in road segments towards beach areas. Lezha region is one of these Albanian attractions, among others, famous for the Shengjinbeach. Visiting it in summer is a real challenge, because of traffic congestion caused by insufficient road infrastructure, influx of visitors, lack of signaling, etc(Ora News, 2022). As long as, this concentration of tourism during the summer is associated with many natural, economic and social consequences, the issue of infrastructure should be addressed and improved. The improvement of physical infrastructure is an important and valuable tool related to the development of tourism(Lee et al, 2020). The chosen area for intervention is the segment from Shengjin to the main intersection at the entrance, which is considered also as 'point of death'. Nowadays, technology facilitates our lives in many directions(Javaid et al, 2018), thanks to its unlimited components and it can be applied as well in road infrastructure.This paper aims to achieve these goals by using internet of things technology and different types of sensors based on it (speed sensors, IP CCTV cameras, smart traffic lights, digital signage, etc). Applying technology in this segment, provides an enhancement of Shengjin accessibility and developing more sustainable tourism in this area, contributing also to the reduction of accidents. In this way, we increase the efficiency of existing roads and improve their maintenance. Despite suggesting other mobility alternatives our proposal will convert the existing infrastructure into a better one, providing in this way a higher quality of tourism in this area and encouraging visitors to access Shengjin more often.*

Key words: Smart infrastructure, traffic congestion, internet of things, sensors, accessibility

1. Introduction- Defining information technology as a necessity and inevitably part of the shaping and sustainable development of future cities, makes us move from the macro level of thinking about what the city of dreams should look like in the future, to the micro level of sustainable and secure development based on the basic components of shaping a city such as infrastructure, services and land and further on the subdomain cells of each component (domain) in the function of the body (smart city). The development of the overall concept of sustainable interdependent development for the city as a basic definition has enabled us to no longer focus only on what we perceive as the digital city of everyday life, but to move forward towards parallel approaches to the cities representing the conception of tourist, industrial, historical city etc.

The concept of an intelligent tourist city in its entirety has social, economic and cultural aspects from where technology has the main role in convergence towards the creation of what is called a smart

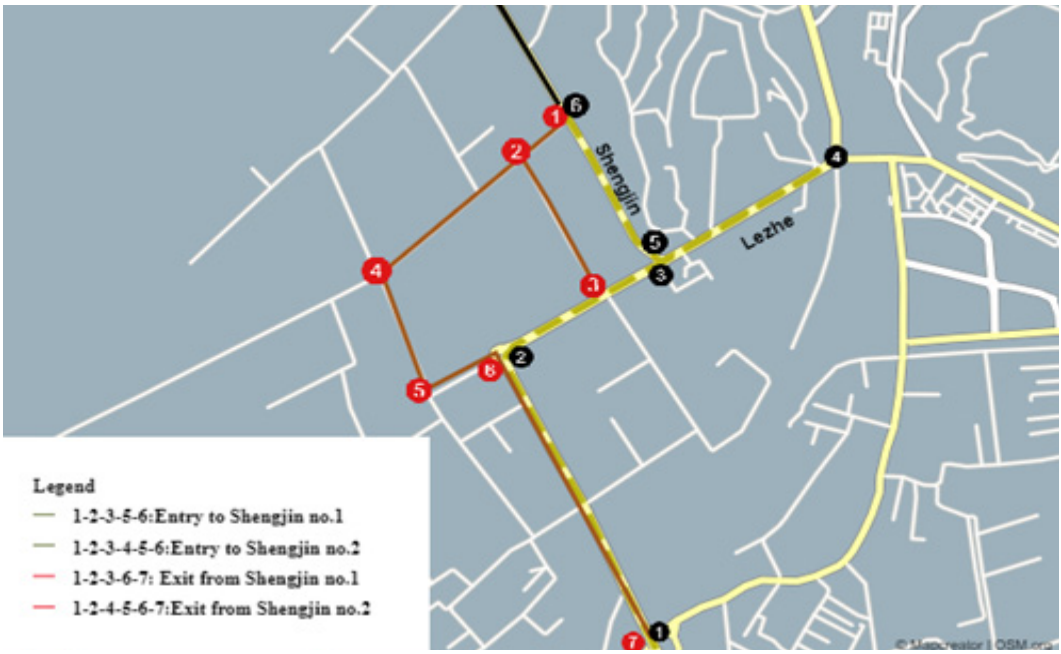

Fig. 1 / Proposed scenarios in the Shengjin-Lezha segment (source:https://www.openstreetmap.org).

touristic city. The city infrastructure itself as the artery of its development relies on its development based on the so-called smart mobility(Jaya et al, 2019).

Lezha is an Albanian city, positioned in the north of the country. It is known for its favourable geographical position, rich history and its tourism potential. Being an infrastructural connection between Kosovo and Montenegro, and having one of the most relevant natural reserves such as Kune Vain make Lezha a strategic area in terms of tourism development. Last, but not least, the recent development of Shengjjin, as one of the crucial seaside tourist destinations in Albania, is an added value to the region. Nevertheless, nowadays tourism in this region is concentrated only during summer and focuses mostly on the seaside and this creates several consequences on the economic, natural and social levels.

In Shengjin, within a coastline of 13 km, the social, economic and historical elements of a classic touristic city are intertwined where technology is not yet present to converge the vital and developmental components of a city and as a consequence, the opportunity to see the city of the future is far away. Nowadays, Shengjin as a tourist city is faced with an increasing number of tourists mainly from Kosovo, and further domestic and foreign tourists (in 2014 during the tourist season the number of people with a daily average reached 40 thousand people).

From the point of view of infrastructural development and the problems that arise from this level of development, Shengjin suffers from heavy traffic which necessarily affects the social aspect (stress and fatigue at the time when people intend to rest), as well as health (pollution caused from the emission of CO2 from) and economic (cost of fuel and cost of time) which are ultimately defined by the negative perception of the city due to lack of movement management.

Although the road that enables the classification of Shengjin as a SmartCity is long and difficult, smart mobility as part of the basic and substantive component of the city of the future (infrastructure) can be implemented more quickly and encourage the development of other components in function of what Shengjin tends to be 'smart tourist city'.

2. Smart Road Technology

2.1 Related work

Nowadays, technology is penetrating many fields of our lives, so also urban mobility is no exception(Vrio, 2022). The application of technology on the roads is called the 'smart road'. It means the use of IoT (Internet of Things)(Jaya et al, 2019), sensors (speed, pollution), IP CCTV cameras, smart traffic lights, etc, in order to increase the efficiency of CCTV existing roads and lead to an improved traffic situation(Javaid et al, 2018). A combination of these 'tech tools' in our analyzed segment from Shengjin to the main intersection in the entrance, will enhance the accessibility developing in this way more sustainable tourism and reduction of accidents in this area. In a few words, we aim to find a smart solution for this bottleneck.

Fig 1.2 Proposed scenarios in the Shengjin-Lezha segment . Source / Autor

Although the traffic generated at the entrance of the road leading to Shengjin is perceived to occur due to the so-called 'the only access road in the area, through a smart signalling system and a real-time data management system we can switch from bottleneck situation, in the situation of traffic distribution on existing alternative, roads but not used for congestion management, especially during the tourist season.

2.2 Simulation work for Shengjin point.

The magnetic sensors placed at points 1(black/S_1), 4 (black/S_4) and 6(red/S_6) will give us a clear real-time picture of the traffic situation in this segment with a focus on the flow towards the level of congestion in the Shengjin segment. These sensors provide vehicle count, occupancy, and speed information. Vertical traffic lights will be placed at points 2(red)and 3(black) in order to orient the flow depending on the real-time data generated from both sensors. Both proposed scenarios are illustrated through algorithms below:

Short path scenario (algorithm):

If S_4 detects no heavy traffic (from Lezha to Shengjin direction)

And

If S_1 detects no heavy traffic (at the entrance)

Then

Traffic_light_3 activates short entrance path (1-2-3-5-6) and traffic_light_2 activates short exit path (1-2-3) else

Long path scenario (algorithm):

Traffic_light_3 activates long entrance path (1-2-3-4-5-6) andtraffic_light_2 activates long exit path (1-2-4-5-6-7)

In a few words, the data generated in time units will enable us to react in real-time in the direction of the transition from the centralized organization Shengjin access through point 5, to the flow transition at level 1-2-3 and simultaneously to 1-2-3-4. This orientation will be done through a vertical signal connected to the traffic management system that receives signals from magnetic sensors.

The transition from a level of mobility interruption (T or 3-5) to the mobility level (U or 3-4-5), not only does not create congestion and interruption at point T but allows creating a natural flow and saves not only time but also at the same time gives opportunities for reduction of pollution and stress through the use of data collected by magnetic sensors and their management to give the right signals to the vertical signage.

The analyzed segment must be operated through the bicycle chain model (roundabouts 2 & 4) as the entrance model to the Shengjin and the snake model for the exit from the Shengjin at the traffic peak, which coincides with the tourist season, where R_2 gear plays the role of 'slide' to the normal traffic flow, for both those coming from the main interurban road and those returning from Shengjin, avoiding unnecessary interruptions.

3. Conclusions and discussions.

The application of the proposed scenarios above during the tourism season will make Shengjin take a breath, providing a higher quality of tourism and attracting more visitors to access its beaches. The main

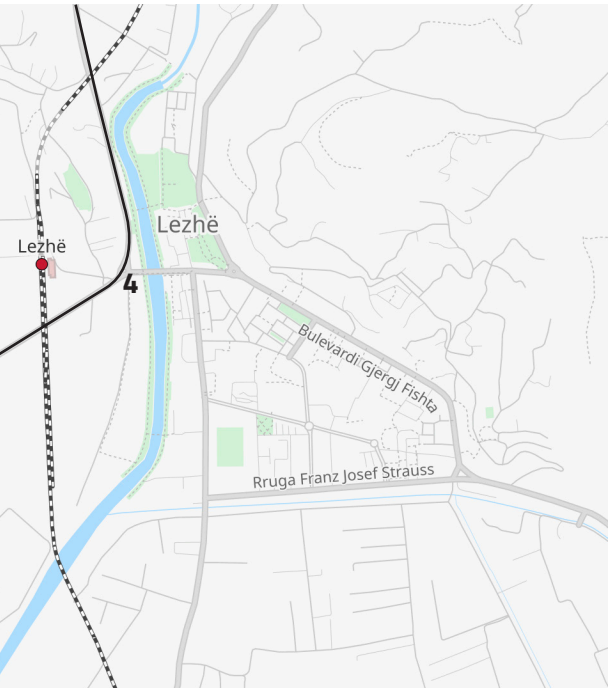

Fig 1.3, existing situation.
Source /(source:https://www.openstreetmap.org).

idea of this success considers sharing the traffic flows into 'veins', not concentrating it in the main arteries. After being first tested in simulators, these steps need to be implemented (hardware and software) in reality and probably be part of the general local plan.

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Construction and demolition waste in Lezha.

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Abstract- *Lezha is a city that has its beginnings in 385 BC. The geographical position of the city, together with its surroundings, has made Lezha one of the most important commercial and military-military centers since ancient times. Considering how old it is as a city and how much development it has had over the years, we can say that construction in this city is quite developed. The last 10 years there is an explosion of high-rise buildings near the beach in Shëngjin and in the city of Lezha.*

C&D (construction and demolition) waste are waste generated during the construction time of various facilities and from the demolition of buildings for various reasons. So in Lezha city are present both type of waste. C&D waste materials typically include soils, concrete (which is going to be the material analyzed in this paper), bricks, glass, wood, plasterboard, asbestos, metals and plastics. In the amount of the waste the amount of concrete waste was also affected by the November 26 earthquake because many houses and mansions were damaged and remain non-functional and the only thing that could be done was to collapse. The fact that Lezha is a city with highly developed tourism in both sea, agro-cultural and mountain tourism has made the buildings increase in number or be rebuilt to meet the contemporary requirements of tourist needs. Also it is foreseen by the local institutions of Albania that by 2031 in the city of Lezha to generate 24219 tons per year of inert waste as a consequence of the increase of tourism and the predictions for the increase of the population.

The problem with construction waste, especially concrete, is that although many years pass, the concrete is not degradable, it remains as it was produced and in the place of disposal. By not treating the waste properly many agricultural lands will be turned into landfills with construction waste, we will have an environmental impact and in protected areas, tourist and public spaces for citizens.

This paper focus on an analysis of the C&D waste in the city of Lezha. The purpose of the study is to present the management situation of C&D waste in Lezha and based on this policy to provide some short-term and long-term solutions to solve the problems that come as a result of mismanagement of this waste. Using alternative management routes could result in both environmental and cost savings, also on a better development of tourisms.

Introduction- The European Commission considers construction and demolition waste (C&DW) as a priority waste stream because of the large amounts generated and its high potential for reuse and recycling embodied in the composition of the waste. Specific legislation for C&DW has been developed in Europe such as the Directive 2008/98/EC on waste, which focuses on the need of measure the waste stream and to further develop the material recuperation proficiency of C&DW in the European Union . As indicated by this Directive, the reusing objective of C&DW by 2020 is 70%, and accordingly reusing offices are required to accomplish this objective In view of volume, Construction and Demolition (C&D) waste is the biggest waste stream in the EU. In a lifetime, an normal European resident creates at least

Fig. 1 / Existing small fishing ponds in Shengjin. Source /author

160 tons of C&D squander, a sum which is expanding over the long run. The C&D waste, generated by the EU countries include a wide range of materials, mostly inert such as: excavation materials, road construction and maintenance materials, but also can contain hazardous waste types, which can be present in significant proportions when buildings are demolished or renovated. Denmark, Estonia, Germany and Ireland all recycle over 70% of generated C&D waste, but a minimum 40% of the total recycling is by the recycling of dredging soil, soil and track ballast.

In Albania the situation is slightly different, except for the fact that waste recycling is still unexplored and their treatment is in the very early stages. There are many studies done regarding the waste generated in Albania but studies related to solid waste and especially for waste generated from construction and demolition of various engineering facilities are few. Based on the study NATIONAL SECTORAL PLAN FOR SOLID WASTE MANAGEMENT it is predicted that in Albania from 1986,281 tons/year in 2018 the amount of waste will reach 2288,299 tons/year in 203, meanwhile in Lezhe which will be the case study in this paper the amount of waste is predicted to change from 25,680 ton/ years in 2018 to 43,974 tons/year in 2031.

According to Albanian regulations, constructors (producers of inert waste, construction waste and demolition)) must pay a deposit to the local government to obtain a construction permit. The deposit is repaid at the moment when the requirements of the Regulation on Inert Waste are met by the constructor. This action requires a high monitoring capacity, as responsible officials need to know the amount and type of inert waste generated by each construction and demolition activity and monitor the final destination of all these materials.

Although there are several plans, there are laws, different plans for the treatment and management of different wastes in Albania, the situation is still very problematic. Inert waste, some of them are used in construction sites as substitutes for various fillings, some are deposited in Lanfield that are determined by the government itself or by the municipalities of different cities, but a significant amount is deposited along the roads in different areas. Agricultural but also near rivers or lakes without respecting any criteria.

Case study Lezha- Lezha is one of the cities that generates the largest amounts of waste from construction and demolition of buildings. In the city of Lezha we encounter waste generated from the production of natural raw materials such as gravel, sand or granule in the two main production points such as the Mat river and the quarry at the entrance to Shengjin. The city of Lezha is divided into areas with a different focus on development. The first area is Kune Vain lagoon, this area includes one of the main coastal cities such as Shengjin, which recently has had a very large development which is accompanied by a large boom of buildings with high buildings when we can say that they are buildings with a number of floors

Fig. 2 / C&D waste on the coast along Shengjin-Kune road, Source/ author.

on average 6. The second area is focused on the development of agritourism, which includes Zadrima, Fishta, Ungrej. The third area is historical area and the area characterized by constructions from ancient times to the present day. The last area is the industrial area that we can say is the area that has the largest amount of construction waste.

The solid waste generated are those produced during construction and demolition, but also in Lezha we have waste that comes from the extraction of natural material at the two production points of the river Mat and Mali i Rencit. According to national sectoral plan for solid waste management the amount of waste in Lezhe is predicted to change from 25,680 ton/years in 2018 to 43,974 tons/year in 2031. The amount of waste generated is also affected by natural disasters. The earthquake of November 26, 2019 caused a lot of damage in different cities of Albania where one of the most affected was the city of Lezha. According to the data published on the official website of the municipality of Lezhe, 13 buildings were out of function and collapsed. Many other mansions and many private homes have been in need of reinforcement and restoration.

Lezha is a city that is well structured for waste management in general but encounters some problems in solid waste management. During the site visit, some problems with construction waste were encountered.

Place of solid waste dumps seen in the city of Lezha:

1. Agricultural fields.
2. Side road deposits.
3. Kune Vain lagoon. Although this is a protected area it is not at all protected from illegal dumping of construction waste.
4. Deposits along the road to Shengjin and around the swamp in Shengjin or near the coastline where in some places due to the amount of waste that area has become impossible to be frequented by tourists.
5. Mat river.

Conclusions

Recycling and re-using of C&D waste is the answer of waste management. Proper management of C&D waste and recycled materials – including the correct handling of hazardous waste - can have major benefits in terms of sustainability and the quality of life. But it also can provide major benefits for the EU construction and recycling industry, as it boosts demand for C&D recycled materials.

What can we do with the waste generated by the construction and demolition of engineering works?

The first step is the estimation of C&DW generation and the second step is the multicriteria analysis of the C&DW management alternatives. Results from the estimation of the generation of C&DW in Cantabria using four different ratios of waste per unit area of construction, demolition and renovation activities show important differences in the total amount generated upon the used ratio.

From the field visit an option of reusing solid waste as the city itself is an attractive city for fishing is to use the waste to create small fishing piers. In this case no

Fig. 3/ C&D waste in Kune, Source/ author.

treatment is needed just to collect them and create a path in the sea with gabions.
Another option is to recycle C&D waste especially concrete waste. Concrete is recycled by using industrial crushing equipment with jaws and large impactors. After the concrete is broken up, it is usually run through a secondary impactor and is then screened to remove dirt and particles and to separate the large and small aggregate. The small aggregate could be used as aggregate for new recycle concrete, but this must be confirmed by laboratory tests.

Another suggestion is to use the tested C&D waste as a base for roads or as fillers in various facilities.
The benefits of waste management:

- Environmental benefits. A better treatment of waste would bring an improvement of life not only to the inhabitants of Lezha but also to all species living in different lagoons and forests.
- Using recycled material as gravel reduces the need for gravel mining. This would protect natural and cultural monuments of special importance not only for the city but also for the state. An example is the Zogu Bridge over the Mat River. Also the Kune-Vain lagoon.
- Reduced tippage and related freight charges
- Cheaper source of aggregate than newly mined
- Reduction of landfill space required for concrete debris
- Visual benefits
- Increasingly, high-grade aggregate for road construction is available only at greater distances, increasing the associated economic and environmental cost impacts associated with the longer haulage distances versus using recycled aggregate.

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Preservation of cultural heritage in Lezha city

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Abstract- *This paper is oriented and is part of the research on the discovery, to discover and create a revitalization of Lezha which has been left in oblivion. Lezha is a city with historical and cultural values which have many years remained unrestored. This paper will focus more on how these cultural monuments can be brought back to attention.*

The methodology used shows how through new methods we will be able to revitalize the city of Lezha. The objective is how a network of identification of these values will be created and their restoration without intervening without breaking the history, but preserving and developing this history.

The aim is how the city of Lezha will connect these points as a cultural network and as monuments that need to be restored because over the years nothing has been done about them. The restoration will be done after they are well analyzed where they have problems and how they should be repaired.

These monuments play an important role in the transfer of cultural identity. When monuments or heritage buildings are degraded, damaged, or physically destroyed; could not function better; or require new design components, careful preservation is a key, ensuring that the original dignity of a structure is preserved.

As a result, heritage is a concept that covers many areas, whether cultural or community, but is also related to the community. Especially in the city of Lezha, to make various interventions, there must be a well-thought-out plan of what will be restored and what will not. if it will be only historic dwellings which have been damaged or along with them and monuments. When we decide to restore the apartment, we will need to interact with the community.

Keywords-*Preservation, restoration, Lezha City, buildings.*

Introduction- Cultural heritage is the physical heritage of artifacts and objects of society that are inherited from past generations, to present generations to care for the good of future generations.

Cultural heritage includes cultural property also known as material culture (such as buildings, monuments, landscapes, books, works of art, and various objects), spiritual culture, (such as folklore, traditions, language, and traditional knowledge), as well as and natural heritage (including important cultural landscapes. ("Indigenous Cultural and Intellectual Property (ICIP) (AITB)". 21 July 2021.)

The deliberate act of preserving cultural heritage for the future is known as conservation. Restoration and protection of cultural heritage remain one of the main points of development in Albania.

The conservation is a process that works in parallel with cultural heritage that recreates is true cultural product), accumulating the marks of passing generations. As such, it must be placed in its larger social contexts - as part of the larger cultural sphere; as an activity reshaped by forces such as globalization, technology development. It can serve as a basis for economic persons and to

Fig.1. Lezha Lagoo. Source: Author

ensure that conservation is "important" to the society in training. Conservation was a relatively autonomous, closed field composed of specialists and experts. These experts, together with art historians and archaeologists, decided what was significant and thus needed special attention and care, and there was a consensus among those who had the power to act on the values to be preserved. The lack of protection and care of cultural heritage and the lack of their restoration have left the city of Lezha underdeveloped in terms of culture.

Lezha is a city which is located in the southern part of Shkodra. A city that has history and cultural events. The ancient city of Lezha is located on hilly and plain terrain with surrounding walls of the castle. In this city what was noticed was that culture was not lacking but the cultural itinerary was still underdeveloped. This article offers a theoretical review of the origin of the concept of the cultural heritage of the city of Lezha.

Heritage Industry - At this time cultural values are dependent on the economic development of a country and this is making heritage the industry itself. Many objects have been left in oblivion and in particular, deindustrialization has allowed them to try to create a socio-cultural and economic regeneration of culture and especially heritage, more broadly as part of the stimulation of urban enterprises.

Cultural and especially heritage industries contribute to economic regeneration in historic urban landscapes; filling the void left by extinct factories and warehouses and creating a new image that would make them more attractive while giving cultural value, turning them into museums, fairs, and recreational spaces.

On the other hand, the preservation of the cultural heritage served as an economic force, especially and socially in a developing country like ours and especially as the city of Lezha which is not yet a cultural heritage has no economic works. In the developing country, preserving the cultural history of sustainable life by increasing the sense of identity of the inhabitants.

Based in the city of Lezha, the relevant concerns are the preservation of protected areas and the integration of tourism with the rest of the activity of the region. A bicycle route from Lezha to Laguna can be crucial to reducing car use in protected areas without adversely affecting tourist accessibility. For the same purpose, a panoramic bicycle path from the lagoon to Shengjin could be an opportunity.

Lezha is a historic city known for it's cultural and historical heritage. Every year, the heritage industry attracts tourists from all over the world, resolutely preserving the history of the city. I have divided the itinerary of the heritage industry in the city of Lezhe into 6 key points that connect different parts of the city in a single line.

First: Historical Site (Lezha Castel)

Lezha is famous for it's historical monuments and Lezha Castle is one of them, which has historical importance as the former residence of the Albanian National Hero Skenderbeu. This castle is a monument which must be preserved and taken care of as it is a very strong tourist point and popular attraction. The

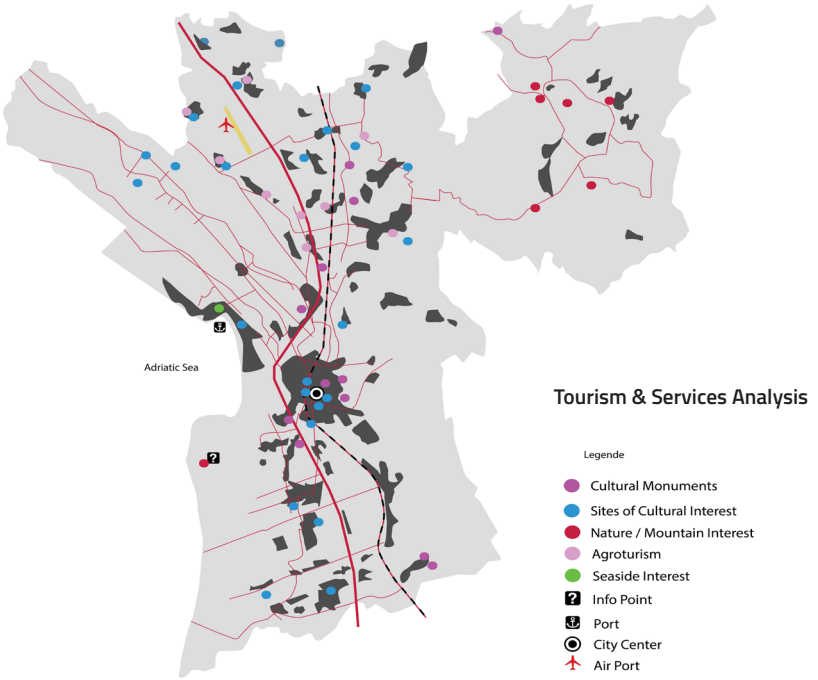

Fig.2. Cultural intineray maps. Source: Author

view of the city of Lezhe from this point is amazing.

Second: Archeological Sites (Lissus)

The second chosen is the archaeological area. The city of Lezhe is rich in archaeological sites, the most famous of which is the ancient city of Lissus, a space where Roman and Byzantine ruins and structures can still be found today. This archaeological park is like a museum which offers tourists to know the cultural past.

The third: Skanderbeg Museum:

The third chosen is the Skanderbeg museum, which is located inside the castle of Lezhe. So the created route connects parts that are inside each other and for this reason it is easier for tourists to visit. This museum is known for the artifacts, weapons, historical documents related to the life of Skanderbeg and the resistance of the Ottoman Empire.

The fourth is Cultural Events:

The fourth choice is the cultural events, this city is full of cultural events and throughout the year music festivals, cultural shows, folk dance shows, exhibitions, workshops with local crafts, works of art, and traditional foods are organized.

The fifth is Religious Sites (Church of Saint Kolli)

The fifth selected are the religious buildings where the Cathedral of Lezhe should be highlighted, which is one of the oldest churches in Albania, which today is a religious building that is visited by tourists for its beautiful frescoes and architectural features. This church must be restored and maintained as an architectural restoration and that of the frescoes so that it has a long life and does not lose its historical value.

The sixth is Tourism Infractructure:

The sixth selected is the tourism infrastructure where the heritage industry in Lezhe has made this infrastructure develop including accommodation, restaurants, souvenir shops and objects of cultural value. Tourists as well as citizens can choose according to their preferences which of the city's heritage attractions they will choose.

The heritage industry in Lezhe is very important for the preservation of the cultural and historical identity, for the preservation of the tradition and providing benefits through tourism. So this itinerary, both cultural and historical, which basically has the evidence of these monuments and their preservation, is promoting the country and attracts national and international visitors, and this point is related to the meaning of the heritage industry.

Heritage Itineraries- Cultural heritage today is an asset that has the source of integrating territorial resources.It needs to be preserved and created because of the economic value it has today and there are some changes in future generations may be from it. In our society it is important that some have some that are thought to be vitally prepared for future generations. Moreover, it is a feeling that they generate a feeling for the whole society and make the society feel different from the other nations. The legacy of other emotions affects some like other art products,

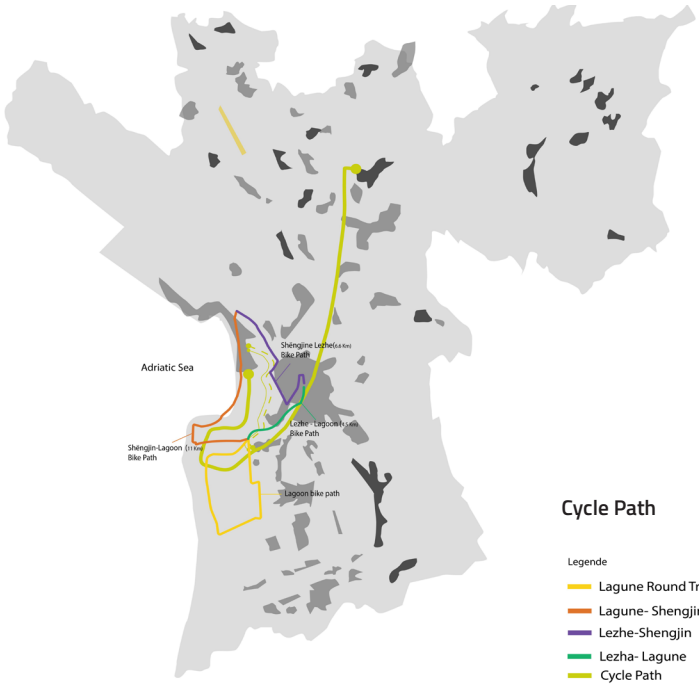

Fig 3. Cultural intineray maps. Source: Author

traditional houses, statues, temples, traditional festivals, museums, historical and other events. It is important to create a cultural itinerary like that of museums of traditional constructions. Meanwhile, the role of municipalities in promoting cultural orders is very important.

While the summary innovation is important to emphasize that we must have the right tools to act in the identification and development of cultural resources. Some of them in Lezha are Lezha Castle (fig below), The memorial tomb of National Hero Gjergj Kastrioti Scanderbeg, and The lagoon system of Kune - Vain.

As you can see in the maps above, Lezha is a city which these cultural itineraries are related to the heritage of this country as well as the monuments. A very interesting itinerary would be the historic, religious heritage, cultural immersion, natural beauty itinerary.

These itineraries, and especially the historical itinerary, connect all these historical points to one another. As in the map above, the itinerary begins with the Castle of Lezha, the exploration of the ruins along its walls, where it continues with the Museum of Skanderbeg located inside the castle, where there are exhibitions of various documents, and at the end of this historical itinerary is the Lezha Museum, which focuses on traditional issues.

The second itinerary is the Religious Itinerary, which starts with the Church of St. Kolla, known for its importance, and then continues with the exploration of the Fatih Sultan Mosque, where both the church and the mosque should be evaluated for their architectural importance. These itineraries and why they are separate according to a logical connection by grouping them all together, they act as a single entity and the goal is to preserve these cultural heritage values.

The third itinerary is related to the traditional ones, if you walk through the city you will notice the traditional houses. The old Bazaar, which sells fresh products, handicrafts, souvenirs. Different shows are often created to preserve values.

The fourth itinerary is natural where the Lagoon is the main itinerary and then the connection that is created with the Shengjin beach, then the Drin river and in each of them you can enjoy the tradition of food.

While culture and heritage have become the business of cities, one of the most important consequences of urban conservation policies is the transformation of heritage into a "product" with marketing value under the name of cultural capital.

In this way, it is possible to define the heritage industry as the management of historic sites and the cultural heritage as consumption spaces that have been reorganized.

Conclusions

This paper shows how the cultural heritage will affect the city of Lezha, the benefits we have from it, how to preserve and develop the city while respecting the culture. How other results of the damage of this culture affect the city given the slopes that affect society today. The paper shows the conditions in which the storage field operates. Where and how to find conservation place in the city.

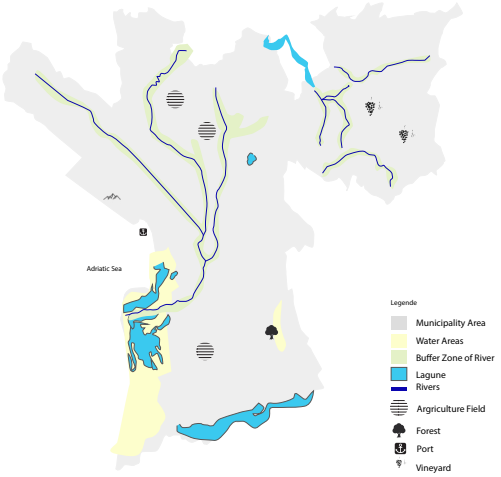

Fig.5. Hydrography Analysis. Source: Author

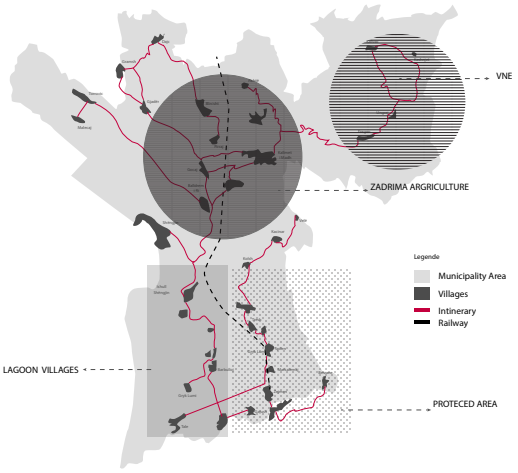

Fig.6. Villages Potentials Clusters. Source: Author

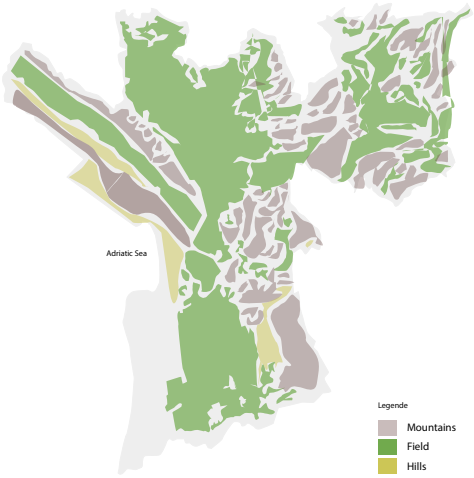

Fig.7. Morphology Analysis. Source: Author

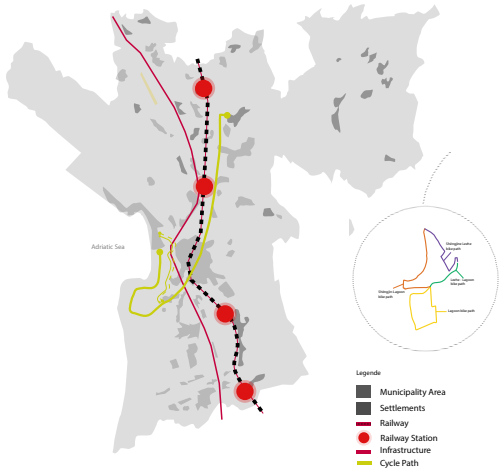

Fig.8. Train Stations. Source: Author

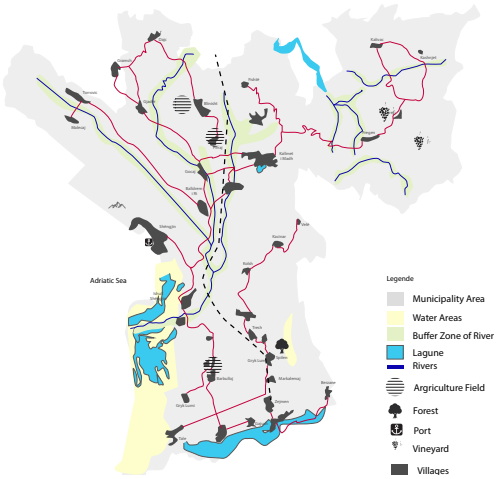

Fig.9. Overlapping Proposal. Source: Author

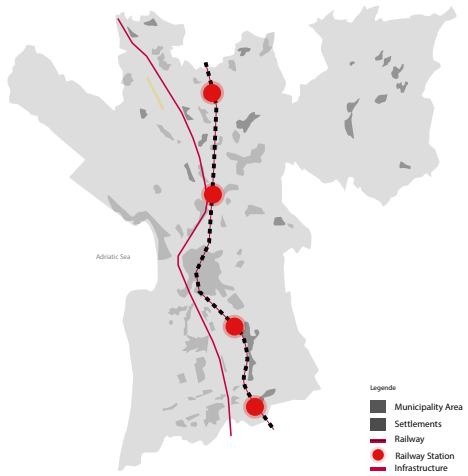

Fig.10. Train Stations. Source: Author

Fig.4. Lezha City View, Source: Author

Cultural heritage is valued in a variety of words, for a variety of reasons: to change and negotiate identity; to bond within a social group, as a nation or a neighborhood; to bring an economic profit; to send a political message and more.

Ultimately, cultural heritage itself finds itself in a connection between preservation on the one hand and change on the other. This depends on the relationship that the city has with these cultural values and this is related to the geographical area, the extent of the city, and its importance concerning other areas.

This topic is very much related to the sensitivity we have toward the treatment of cultural heritage. This topic is related to the identity and histories of the communities themselves. This makes it a social phenomenon along with its potential to be a catalyst for the further cultural and economic development of the city of Lezha.

All these features that the city has will bring cultural and economic development to the country and will preserve great historical and cultural values inherited from generation to generation.

These assets can create very good cultural itineraries which can be related to other surrounding areas and this leads to the creation of a strong economic-cultural network.

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Proposals for the protection and conservation of biodiversity and the Environment.

Lezha Energy and Ecological Corridor (LEEC). Climate Resilience through Blue and Green Corridors in Lezha Municipality

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Abstract- *This research paper builds on the analytical work conducted by the Doctoral Candidate, initiated on November 2021, during the International PhD Workshop between Polis and Ferrara Universities as well as based on his previous experience with Renewable Energy projects and Evaluation of Ecosystem Services conducted by the candidate under the "Green Lungs for Our Cities" project (link), supported by the EU Delegation in Albania. Given the climate and ecological disturbed balance in urban areas, future planning exercises shall be oriented towards climate neutral and decarbonized cities. Urban and territorial strategies nowadays seek to explore and determine the appropriate instruments for that Nature Based Solutions NBS and Ecosystem Based Solution EBS are enabled to decrease the deterioration of human impact on all the ecological networks.*

Moreover the Sofia Declaration (Regional Cooperation Council, 2020), an instrument that factorizes the EU Green Deal for Western Balkans indicates precisely that one of 5 key development sectors should be Biodiversity preservation and joint management.

Ecological networks including here the hydrology, green areas, geography, climatic conditions, energy metabolisms, transport infrastructure and industrial interactions can coexist in harmony if they are extracted form the ideology of approaching them as separate networks within a linear approach. One can always affect the other therefore "Between them there is no contradiction, but only profound opposition: to be resolved projectually" (Dardi, 2009) .

Main objective of this research is to initially seek and determine an adequate relationship between ecosystem services provided by Green, Blue and Natural networks within the urban areas of Koder Marlekaj, Lezhe-Shengjin axis to further connecting them throughout a potential Ecological Corridor that would allow the terrestrial biodiversity of Kune-Vain-Tale protected area access high territory in cases of wildfire, flooding or other extreme-climatic events.

Such intervention will pose a new systemic approach towards problems and issues, which are caused mainly by a rigid and linear approach from nowadays Urban Planning and Decision-making practices at a local and national leve. The purpose of this research paper is threefold:

(i) to verify the biodiversity preservation potential of a new ecological corridor between high-land and lagoon,

(ii) in terlink the mix of urban-energy-ecology nexus within a specific case study whereas ne urban planning tools,

(iii) propose relevant measures to increase the resilience of the Lezha-Shengjin territory with regard to Climate Change implications.

Key-Words: Ecosystem Service, Ecological Network, Climate Resilience, Renewable Energy, Biodiversity.

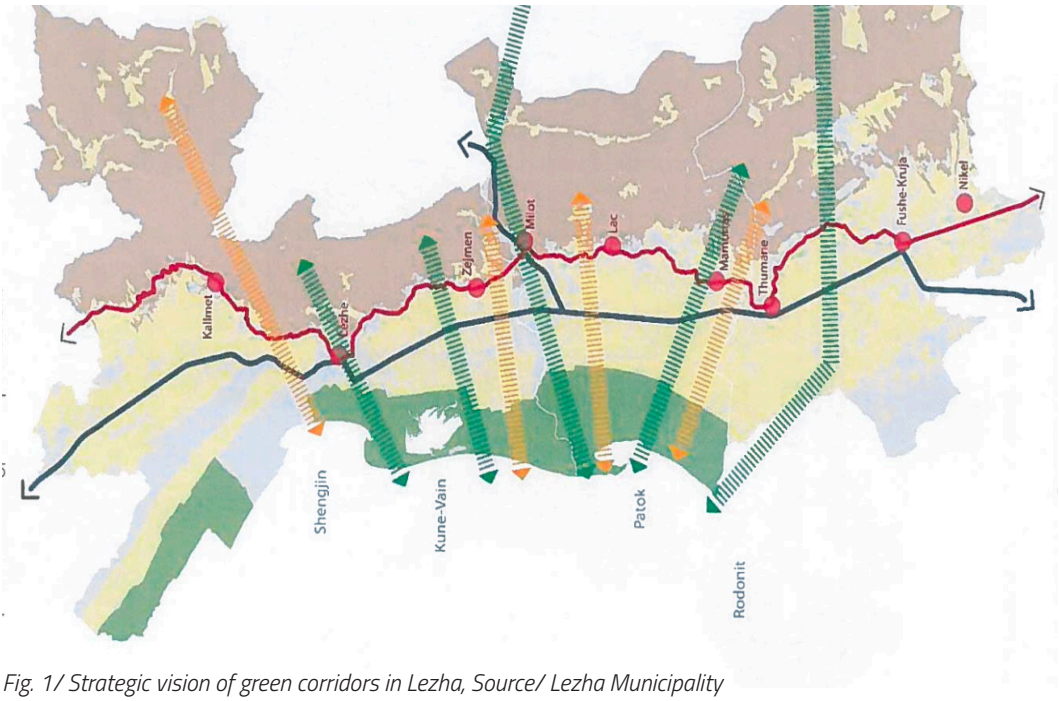

Fig. 1/ Strategic vision of green corridors in Lezha, Source/ Lezha Municipality

Introduction-The Municipality of Lezha is located in the western plain of the Republic of Albania, in an area of 508.9 km2, bordered on the north by the Municipalities of Vau i Dejës and Puka, on the west by the Adriatic Sea and the Municipality of Shkodra, on the east by the Municipality of Mirdita and on the south by the Municipality of Kurbin. The municipality consists of 10 administrative units: Lezha, Shëngjin, Zejmen, Shënkoll, Balldren, Kallmet, Blinisht, Dajç, Ungrej and Kolsh. (National Agency of Urban Planning, 2017)

The territory contains two main urban areas (the city of Lezha and Shëngjin) and 65 villages. The total population of the municipality, according to the Civil Registry (2017) is 106,245 inhabitants, with an average population density of 209 inhabitants / km2. This data positions the municipality among the 10 most populated municipalities in the country.

Lezha has a very favourable and strategic position, located in short distance to some of the main cities, such as Tirana (55km), Podgorica (98 km), Shkodra (44 km). Also, the municipality is located close to the main national infrastructure nodes, such as the Port of Durrës (70 km) and Rinas Airport (40 km), while the Port of Shëngjin is part of the municipality.

In regards to the terrain features, the Municipality of Lezha, for the most part has a plain relief, where the western part consists of sandy beaches and the wetland area of Kune-Vain-Tale (Protected Landscape). In the eastern part, the terrain has a gradual increase in height and adopts mountainous hilly features. The natural landscapes are diverse and, in some areas, the terrain is below sea level. Its highest point is 'Maja e Velës' (Administrative Unit of Kolsh) with an altitude of 1170m, while the average height of most of the territory is 5 meters above sea level.

This geomorphological variation poses a challenge to the municipality in managing various natural hazards. The territory of the municipality has a very rich hydrography. The north-western part is traversed by a stream-line of the Drin River and Gjadri River, while in the south, the municipality is bordered by Mati River and its delta. Occasionally these rivers, as well as the entirety of the hilly-mountain streams, pose a threat of flooding, with significant consequences for agricultural land.

The Municipality of Lezha is recognized for its long coastline, which starts from the protected nature reserves of the Mati Coast and Kune-Vain-Tale to the rocky beaches in the north of the settlement of Shëngjin with an overall estimated surface of 4290ha. The coast of Shëngjin, during the last 25 years has undergone a high-density development, non-consistent with surrounding natural features.

Nevertheless, a large part of the coastline belonging to this municipality has not yet undergone any development, and there are still virgin beaches, which need to be protected and properly managed since during the last 3 decades they have

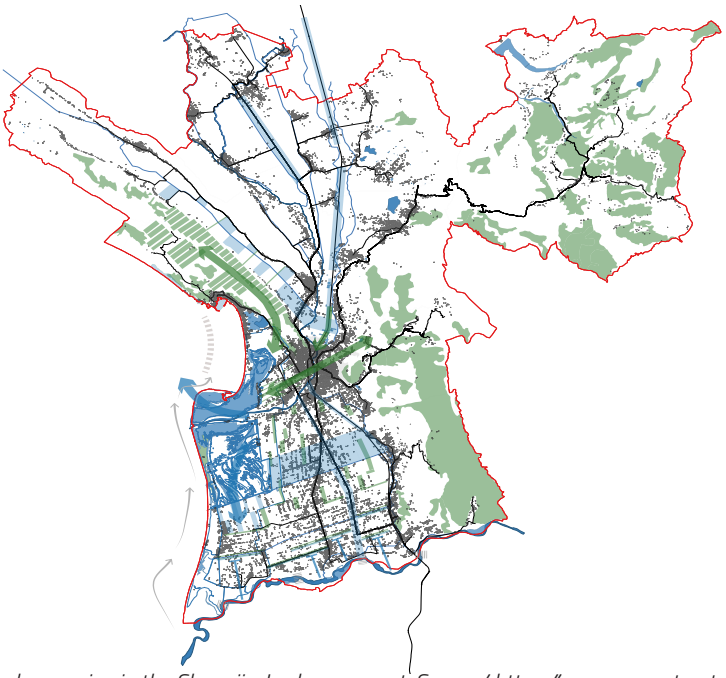

Fig. 2/ Proposed scenarios in the Shengjin-Lezha segment, Source/ https://www.openstreetmap.org.

been subject of a diverse and aggressive fragmenting intervention for economic, infrastructure, tourism purposes. (Co-PLAN Institute for Habitat Development, 2020). According to latest monitoring conducted by Nature Science Museum experts there are at least 11 mammal species nesting within the protected areas out of which, 7 are considered to be part of the highly endangered for extinction. (UTS-01 VSM Lezha, 2017).
More in specific we can point out that the following species are highly endangered (Natural Science University, 2006):

- Turtles,
Sea Turtule, Sea Leather Turtle (Dermochelys coriacea) and Lagoon Turtle (Emys Orbicularis),
- Serpents,
Thin Arrow Serpent (Coluber Najadum), Small Arrow (Coluber Gemonesis)
-Mammals
Jackal (Canis Aureus), Otter (Lutra lutra), Baldosa (Meles meles), European Polecat (Mustela putorius), Wild Boar (Sus scorfa)

Ecosystem Based Approach and Nature Based Solutions Concept:
Integrating, Energy, Industrial, Green and Blue Networks within peri-urban areas as part of planning practice it is in the benefit of achieving a sustainable solution for the next generation of urban planners, academic discussion and the processes implemented during planning and developing strategies. Given the climate and ecological disturbed balance in urban areas, future planning exercises shall be oriented towards climate neutral and decarbonized cities.
Natural, periurban and territorial strategies nowadays seek to explore and determine the appropriate instruments for that Nature Based Solutions NBS and Ecosystem Based Solution EBS are enabled to decrease the deterioration of human impact on all the ecological networks (IUCN, 2019). Climate change and land use/land cover change (LULCC) are associated with local vulnerability, defined as the intrinsic tendency of a system to be negatively affected by an event or phenomenon, but this can be ameliorated by ecosystem conservation (Laura-Gomez-Aiza, 2017).
The sixth assessment report of the intergovernmental panel on climate changes indicates that there will be an increase in hydrological and agricultural and ecological droughts (medium confidence), projected increase in aridity and fire weather conditions at global warming of 2°C and above (high confidence). Moreover a projected combination of climatic impact-driver changes (warming, temperature extremes, increase in droughts and aridity, precipitation decrease, increase in fire weather, mean and extreme sea levels, snow cover decrease, and wind speed decrease) by mid-century and at global warming of at least 2°C and above (high confidence). (United Nations, 2020)

Ecological networks including here the hydrology, green areas, geography, climatic conditions, energy metabolisms, transport infrastructure and industrial interactions can coexist in harmony if they are extracted from the ideology of

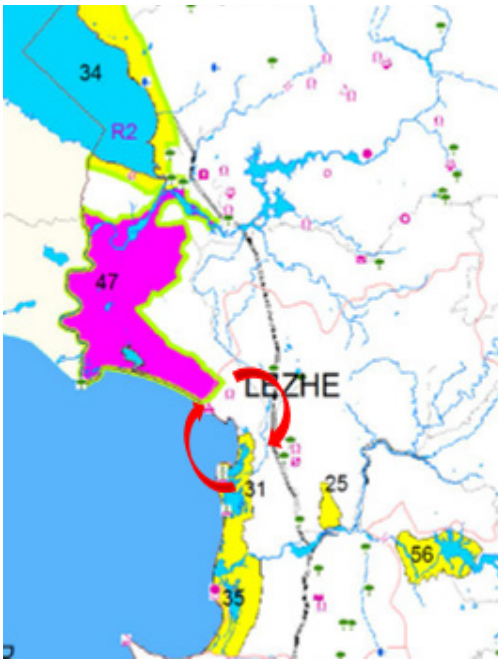

Fig.3 / Network of protected areas in North West Albania.

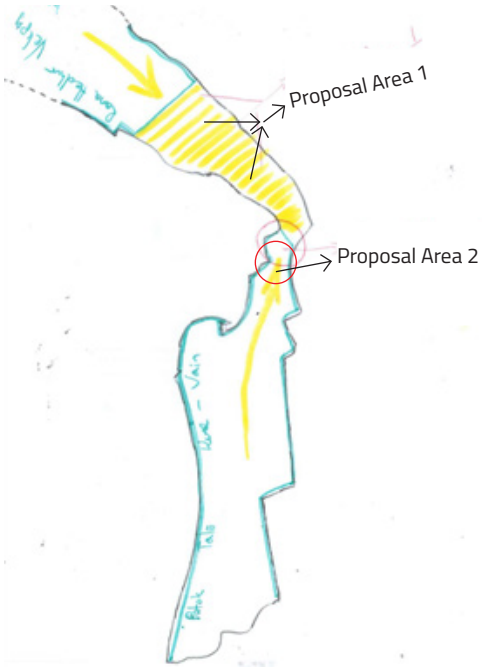

Fig.4 / Proposed ecological corridor for Lezha

approaching them as separate networks within a linear approach. One can always affect the other therefore "Between them there is no contradiction, but only profound opposition: to be resolved projectually" (Dardi, 2009)

Lezha Environment and Climate Status.
The Municipality of Lezha inherits an incomparably rich natural environment characterized by: diversity of terrain features and microclimate conditions; edaphic factors that have created various forest formations; considerable plain areas; vast wetland areas accompanied by lithographs and sandy beaches; geological formations abundant in minerals and groundwater; as well as a rich hydrographic network. The Municipality of Lezha has a number of protected areas of national and international importance.
The Kune-Vain-Tale Nature Reserve is a tremendous potential for the area. Another protected natural area is that of Bërzana, which is also classified as a Natural Reserve. After the 1990s a series of actions were undertaken to demolish and disactivate some of the industrial facilities, such as the former Paper Factory, which was a growing cause of pollution.
These actions had a positive impact on reducing industrial pollution. However, a number of other phenomena increased the pressure on the natural environment, leading to its degradation in some cases.

Some of these artificially induced phenomena are:

- the increase in the use of limestone and gravel from the Mat riverbed;
- overexploitation of groundwater and especially of the aquifer of the Mati Coast area;
- reduction of Drin e Mat River flows from cascade interventions; the use of forests and consequently the
- increase of erosion as a whole, especially coastal erosion;
- an increased traffic from motorized transport, and informal constructions in protected areas.

In particular, the coastal area below sea level is experiencing major effects from climate change,
such as high-tide marine storms, flooding by rivers and seawater, prolonged droughts, heat waves, strong winds, etc. The coast of the Municipality of Lezha for decades has been facing a very aggressive erosion caused by the drastic reduction of solid sediments of the Drin River, as well as by the increase in the frequency and strength of marine storms that hit the coast. Studies confirm that the area is quite exposed to extreme climatic events, such as sea storms, accompanied by tides above the perennial average, intense flooding or prolonged droughts, which are becoming quite frequent. The coastal erosion activity in Kune-Vain has destroyed significant beach area and contributed to the elimination or destabilization of dunes and river banks.

Hypothesis on Integrating Nature Based Solutions at a large scale for Lezha Coastal Area.
Main objective of this technical proposal

consists above all to address an emergent need for that terrestrial biodiversity nesting or hosted within Kune-Vain and Tale Protected areas have a larger access especially in high altitude territories in cases of flood and or forest fire.

Given the actual situation whereas these Nature Protected Areas are almost bordered with urbanization, infrastructure and industry there are very few possibilities to conserve an optimal corridor that would serve as natural path for biodiversity forced movement due to climate related events.

Practically this intervention would solve and address to some extent the issue of biodiversity being trapped by the urbanization-infrastructure "fencing" their habitat.

Simultaneously given that for the northern coastline of Adriatic in Albania there is a "gap" that fragments the linear connection between Kune-Vain with Velipoja-Buna Delta as protected Areas.

The proposed corridor stretches from Kenalla Lagoon south up to Viluni Lake in the north. It stretches along a 17km hill with a low-density vegetation, mostly shrubs and with an average altitude of 300meters above sea level.

Such topographic conditions offer by default a optimal territory for Ecosystem Based Approach Interventions and specific Nature Based Solutions. Moreover, this is a territory of 40km2 whereas the proposed interventions have a great potential not only on addressing an Climate related risk but also providing a sustainable approach on how we project co-existence with nature and habitats.

This area, alternatively known also as Marlekaj Hill should be projected as an Ecological Corridor that addresses the following needs:

a. Connects the Wetland and Lagoon with Marlekaj Hill
b. Offers a biodiversity safe passage
c. Connects Rana e Hedhun with Protected areas in South and North
d. Increase Ecosystem Services through forestation
e. Implement Environment Friendly Infrastructure (Transport, Accommodation, Energy)

More in specific these proposals are divided in two key areas of interventions.

First on Marlekaj Hill the proposals are:

a. Road Infrastructure
b. Energy Park
c. Forestation
d. 3xEco-Bridges

Second intervention is a limited area indicated as a Connection NOD between Kune Vain and Marlekaj Hill, whereas the specific proposals for this area consist on:

a. Encapsulation of Existing High Risk Infrastructure (the Fuel Tanks)
b. 1xEco-Bridge
c. Buffer area (exclusive only for habitat and biodiversity)

As a conclusion these potential interventions bear a rationale that attempts to address Albania commitments to EU Green Deal as a participatory and signatory partner of Sofia Agreement. Hence, such corridor shall not only ensure a biodiversity safe passage but rather boost further more the repopulation and rejuvenation of biodiversity.

A simple and rather natural road infrastructure should be constructed on what is presumed less than 25km road network. The road should be positioned on top of the hill and foresee first three big eco-bridges whereas terrestrial biodiversity could easily move from one side to the other and second a 130m buffer from both sides whereas such area shall be designated for the energy park, wind and solar.

Given the preliminary estimations, such installations can reach a maximum installed capacity of 150MWp with an average annual production of 322GWh of electricity, supplying thus more than 37000 families with electricity on a yearly basis.

Given the low density and presence of vegetation in the area, we propose that a total surface of 22km2 is forested with roughly 2 million pine trees. The proposed species is Pinus Pinaster. It is envisaged that on a 20-year period of time this now grown forest can provide the following Ecosystem Services:

a. Pollution and CO2 natural storage estimated at 15'200 ton/year
b. Oxygen production estimated at 408'00 ton/year
d. Biomass fuel estimated at 7'000'000 liter/year
c. Avoided runoff estimated at 600'000 m3

These ecosystem services consist on 15 million $ economic input as per the above quantitative estimations.

For that the planted forest grows healthy and offers the above mentioned ecosystem services it is strongly required that all the inhabitants of this area are foreseen as direct safe-guards and

maintenance operators of this common pool resource.

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Climate change awareness in the Lezha area through artistic practice.

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Abstract- *The phenomenon of global warming and its triggering effects among which are the rising of water levels is a fact that is happening unstoppably day by day. Many coastal parts across the globe are in danger of disappearing. One of the cases that should be considered is the lagoon of Kune-Vain in the Lezha district.*
The whole area administered by the Municipality of Lezha has problems and will have problems with the floods of the lands that make up this administrative unit. At the same time, the cultural heritage sites of this municipality are endangered. Seen from a wider scale, man has his own responsibilities for these climate changes, such as rising temperatures and coastal erosion. For this reason, the awareness of the residents of this municipality but also that of tourists can play an important role in protecting the ecosystem and even more, in protecting the Kune-Vain lagoon.
Based on several previous implementations. the lagoon in addition to a national park can be turned into an art park through the implementation of art pieces, which will serve to raise public awareness against climate change. The art pieces can give an even greater visibility to the lagoon, increasing the number of visitors.
Artworks that have the same concern about climate changes that are already showed and are part of public art, they can be installed in the Kune – Vain lagoon, by use of sensors, colors, lights, etc. the installations will interact with the rising hypothesis of the increment of water; activating on the predictions of the sea level and rain flood. The works provide a visual reference of future sea level rise.
One of the art works that will suit very well as part of the lagoon is "Lines (57° 59N, 7° 16'W)" (Niittyvirta & Aho, 2018), an interactive site specific light installation located Outer Hebrides in Scotland, UK. The project was a collaboration between Timo Aho & Pekka Niittyvirta.
This installation will explore the catastrophic impact of our relationship with nature and its long term effects. The work provokes a dialogue on how the rising sea levels will affect coastal areas, its inhabitants and land usage in the future.

Introduction

Rising water levels due to global warming is a fact that is happening unstoppably day by day, many coastal parts across the globe are in danger of disappearing. As reported in Nunez's article, she says;

"When sea levels rise as rapidly as they have been, even a small increase can have devastating effects on coastal habitats farther inland, it can cause destructive erosion, wetland flooding, aquifer and agricultural soil contamination with salt, and lost habitat for fish, birds, and plants."
(Nunez, 2022)

One of the endangered areas is the lagoon of Kune-Vain in the region of Lezha. The district of Lezhë - a region of 479 km2 located in the northwest of Albania - has a large diversified ecosystem, its environmental and landscape features are of considerable importance and constitute

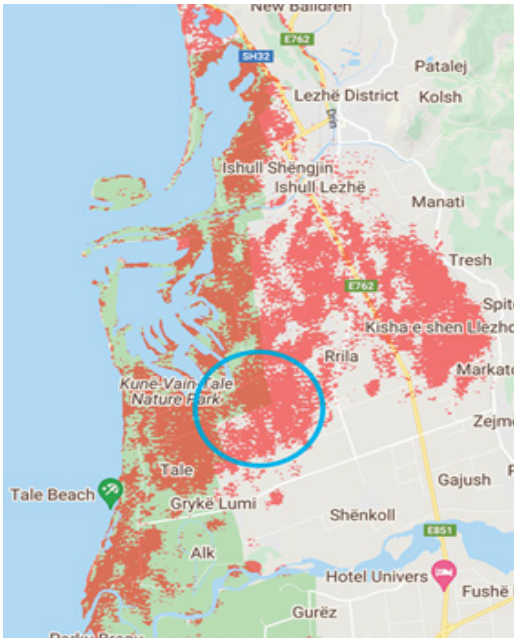

Fig.1 / Lezha area, in circle the area of the hypothetical intervention, in red color the area under flooding.

Fig. 2 / Artistic interpretation of the land that is risked by flooding in Lezha municipality. Cortesy of the Artist.

internal characters of the region itself. One of them is the Kune-Vain Nature Reserve, a wetland system located in the administrative district of Lezha. The area includes the Kune side on the north of the Drini river in Lezha and of Vain to the south of the river. From the total area of the Kune Vain area (excluding the Tale area and the Kenala lagoon) is about 2000 ha Kune Island (part of the Kune slope) is a strictly protected area. Area and according to Albanian environmental legislation, tourism cannot be applied there. The area is bordered by Shengjin beach and the island of Shengjin village, Lezha island village, Tale village and Tales beach, etc. (Kreci & Sinojmeri, 2017)

As is showed at the figure 1[1], not only the lagoon but also most of the area administered by the Municipality of Lezha has problems related to the flooding lands. At the same time, the objects related to the physical – cultural – heritage of this municipality are endangered, as well as the natural parks.

It is difficult to not deny human involvement and responsibilities in climate change, greenhouse gas emissions, river inert exploitation and waste mismanagement are some of the causes of rising temperatures and coastal erosion. For this and for many other reasons it is important that the awareness of the residents of this municipality but also that of the visitors of the park has to be one of the strongest points for the protection of the ecosystem in the area and in the lagoon of Kune - Vain.

1 Figure 1, Lezha area. In circle the area of the hypothetical intervention and in red the land that according to "Coastal Climate Central" is below 0.5 meters of water.

To achieve the desired result, it is possible to look at the European art – parks , such as one of the first of its kind "The forest of Dean" in England, or two other Italian sites "The Chianti Sculpture Park" and "ArtePollino - Pollino National Park" . In them there are art – works that strongly connected with the history of these places which, in turn, acquire a new meaning. (Tiberghien, 1995)

One could work on their example to implement it in the Kune-Vain lagoon as well. These parks, but also many others show us that environmental art interventions increase the number of visitors, visitors with greater awareness towards nature and climate change.

Implementation of art interventions for the rise of climate awareness.

Since the dawn of civilization, mankind had specific areas of territory for particular purposes. Firstly, the places reserved for the worship of divinities followed by the idea of a "park" which has spanned through the centuries. There has been evolvement and development of a variety of parks in the modern era, amongst which is the Natural Park of the lagoon of Kune Vain and according to AKZM (National Agency of Protected Areas) the lagoon is the first protected area in Albania with an edict emanated on 07/07/1940. In continuity with the newly edict emanated on 28/04/2010 (VKM nr. 432) the current status of the area is Managed Nature Reserve/ Nature Park, Category IV, IUCN.

During the last decades interventions through art or public art in the parks has increase significantly and has create an

Fig.3 / Lines (57° 59′ N, 7° 16′W), Pekka Niittyvirta & Timo Aho, Outer Hebrides Scotland UK.

interest and connection to the place.

Art has always looked towards nature, evidence of this are the landscapes well painted by various painters, especially by impressionists. But during the second half of the twentieth century this situation began to change especially with those artistic research which were making their way to the United States, those that came under the guise of Land Art.

These researches or the interventions mentioned above should not be confused with the park sculpture as Germano Celant points out "Environmental intervention differs from the work with the object precisely in that which refers to the purpose of being a work related to a specific context" (Poli, 2003). So Celant clearly shows us that the contextual collocation solicits a sense of reciprocity based on a real mutuality, in which art creates an environmental space, to the same extent that the environment creates art. If we look at works such as Robert Smithson's (Morgan, Holt & Smithson, 1980) "Spiral Jetty" or Walter de Maria's (Krauss, 1979) "The Lighting Field" which are part of Land Art, their link with the territory is evident. And their ability to make people aware of the forces of nature and changes in motion. Tiberghien reports that the creation of the artwork enters ipso facto in the place, with which it establishes a mutual relationship of belonging. (Tiberghien, 1995) In similar way works the intervention of Pekka Niittyvirta and Timo Aho in Outer Hebrides in Scotland.**Lines**

As aforementioned an attempt was made to investigate the ability of art to function as an agent of awareness and as a turning point around which to reflect on the strength of nature and the future of climate changes. But particularly the last one that was mentioned above and that is on view at the figure 3, the intervention of the two artists "Lines (57° 59′ N, 7° 16′W)", an interactive site specific light installation located Outer Hebrides in Scotland, UK. By use of sensors, the installation interacts with the rising tidal changes; activating on high tide. The work provides a visual reference of future sea level rise, everything below this line will be under water.

According to artists note "The installation will explore the catastrophic impact of our relationship with nature and its long term effects. The work provokes a dialogue on how the rising sea levels will affect coastal areas, its inhabitants and land usage in the future". (Niittyvirta & Aho, 2018)

As was mentioned by Isabella Ong & Tan Wen Jun in their essay "Healing And Intimacy In Climate Narratives" (Ong & Wen, 2021), this is particularly relevant in the island archipelago of Uist, in the Outer Hebrides, off the west coast of Scotland, and in particular in the Taigh Chearsabhagh Museum & Arts Center in Lochmaddy, where the installation is located. The center cannot develop on the existing site due to the sea level expected for storm surges. It remember that the Romans used the word "Limes" (Emily Rodriguez, 2020) to indicate a border line, a delimitation line. Something that was indicative of a different place reachable only by crossing the line. At the same way that the two Finish artists use the potentialities of the line.

Fig. 5 / Photo-montage of the proposed intervention in the lagoon of Kune - Vain, Lezhe. 2#

And no longer that a line becomes a visual metaphor of the change in the landscape as we know it, the observer immerses himself in the change becoming aware that such a reality is not a mere hypothesis but a certainty if man does nothing to preserve it.

Conclusions

There are many things to do and artistic projects that can be included in a natural park to activate a common awareness among visitors on climate change and, moreover, in rising water level.

The lagoon in addition to a natural park can host art projects, which should not affect the complex fauna and ecosystem inside the lagoon. The park will take some of the modalities of operation of an art – park , which will serve for the purpose of public awareness against climate change. The art pieces can give an even greater visibility to the lagoon, increasing the number of visitors.

A replica of the installation that Pekka Niittyvirta and Timo Aho (Niittyvirta & Aho, 2018) developed in Outer Hebrides island, due to the same conditions can be installed in the Kune – Vain lagoon, the installation will interact with the rising hypothesis of the increment of water; activating on the predictions of the sea level and rain flood. This intervention will provide a visual reference of future sea level rise.

Furthermore, the idea of using the "line" as a reference to the increased water level, especially for floods, is something that has been present in the Albanian territory. For example, in Shkoder at the Baçalleku Bridge (Ura Baçallëkut) there is a metal rod acts as a limit alert for the water level of the Drini River. Also in Berat a similar situation where some slabs in the buildings show how far the floods have reached in the past.

The presence of art works or artistic interventions in the park will also increase the number of visitors, incr easing the number of visitors to the area administered by the municipality of Lezha.

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Presence of peculiar organisms in the water of Lagoons: Potentially valuables Bio indicators for cultural eutrophication level assessment.

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Abstract- *Coastal lagoons are transitional ecosystems located on the border between land and sea characterized by strong environmental fluctuations which affect the physiological and ecological adaptations of the living species.*
The environmental quality of the lagoon ecosystem depends on the balance between chemical-physical components (water salinity, temperature, water-dissolved oxygen, high productivity, reduced hydrodynamics) and biological processes that define the complexity of the trophic chain. All these factors are strongly influenced by human activities that cause the phenomenon of eutrophication.
The coastal lagoon ecosystem is an heterogeneous environment easily affected by changes of different kinds (both natural and artificial) which cause the reduction in size of wetlands areas, increment of coastal erosion and more frequent flooding. Human activities are also important stressors which can lead to significant biological changes.
In this context the study of the structure and space-time dynamics of biological communities is an important way to assess the ecosystem's quality, to evaluate its healthiness level and to suggest possible strategies for environmental remediation.
The individuation of specific Bioindicators becomes fundamental for a precise assessment of the "health status" of the animal, vegetal and microorganism populations and the quality of their habitat.
The continuous monitoring of Bioindicators over time allows to define plan and realize interventions focused on adapting as soon as possible ecosystem to environmental changes improving resilience to the climate changes.

Key words: Transition water; Bioindicators; Eutrophication; Trophic state; Biodiversity.

State of art

Nowadays climate change and human interventions are becoming the main threats to the availability of water on our planet. The goal number 6 of the 2030 Agenda provides for actions by 2050 aimed to improve the availability and management of this source important for life. The objective of these actions is the protection of the environmental ecosystem linked to water.
In the Mediterranean Sea, the climate change is carrying different risks for the environment:
- Temperature increase of 2.0-6.5 °C
- Decrease in precipitation
- Increase in the probability of environmental disasters
- Increase in sea level

These factors, associated with human interventions, are becoming huge threats to the coastal lagoon ecosystems and they result more dangerous if they happen in synergy. As an example of such a threat, the increase in sea level can reduce the coastal areas and enhance its erosion leading to the loss of a natural habitat, which is pivotal for all the different animals and vegetable species that inhabit this peculiar environment and therefore might become endangered. It is important to

Classes	Intervals	Secchi S (m)	Total Phosphorus ($mg.m^{-3}$)	Chlorophyll – a ($\mu g.L^{-1}$)
Ultraoligotrophic	TSI ≤ 47	S ≥ 2.4	P ≤ 8	CL ≤ 1.17
Oligotrophic	47 <TSI ≤ 52	2.4 > S ≥ 1.7	8 < P ≤ 19	1.17< CL ≤ 3.24
Mesotrophic	52 <TSI≤ 59	1.7 > S ≥ 1.1	19 < P ≤ 52	3.24 < CL ≤ 11.03
Eutrophic	59 <TSI≤ 63	1,1 > S ≥ 0.8	52 < P ≤ 120	11.03 < CL≤ 30.55
Super-eutrophic	63 <TSI≤ 67	0.8 > S ≥ 0.6	120 < P ≤ 233	30.55 < CL≤ 69.05
Hypereutrophic	TSI> 67	S > 0.6	233 < P	69.05 < CL

Table 1/ The table describes trophic class by means of trophic state index (TSI) based on three different trophic indicators: physical indicator (water turbidity), chemical indicator (total Phosphorus and/or orthophosphate concentration) and biological indicator (chlorophyll-a concentration) (10)

take measures to adapt the environment to the territorial changes in order to defend the integrity of the ecosystem and protect it against natural and human-related risks. The actions to adopt must be useful to develop methodologies allowing to evaluate the environmental vulnerability (11).

The transition waters and lagoons are environments which strongly suffer these changes. The mean stress factors influencing coastal lagoons are abiotic and biotic: the abiotic factors have natural origin and concern climate changes (i.e. humidity, rain, temperature variations and wind); they lead to the increment of coastal erosion resulting in flooding and loss of wetland. Biotic factors arise from human activity which happen in the environment, like fishing, mining, farming and building activities and cause significant variations in the biological components of the coastal and lagoon ecosystems (1).

In the lagoon environment changes in trophic states depend on the contribution of different factors such as the circulation and the limited exchange between sea and fresh water, organic and inorganic pollution, erosion phenomena and anthropogenic factors which cause eutrophication.

The lagoons are environments heavily populated by a high variety of plants and animals and it is very important to ensure their survival, in order to preserve the biodiversity of the territory.

A continuous change of the environment forces living beings to adapt for surviving.

For this reason, to understand the dynamics which induce changes on the ecosystem, and therefore on life of living beings, it becomes fundamental to protect the environment. In this frame Bioindicators play an important role to identify early on the environmental conditions (5).

The selection of specific Bioindicators to be used for environmental investigation is critical. A Bioindicator can be an element that readily reflects the state of the environment and represents the impact of change on an habitat, highlighting the ability of the environment to support life (4).

The assessment about "Trophic State" of water is a good indicator to evaluate the eutrophication level of aquatic ecosystem. The high number of algae species can alter the clarity, colour and pH of the water, can promote the formation of foam on the water surface and can reduce the amount of dissolved oxygen and generate unpleasant smell. (3).

Chlorophyll a (algal biomass assessment parameter) and phosphorus and nitrogen total quantity (nutrients responsible for algal growth) are used as indicators to evaluate the "biological productivity" of the aquatic basin representing the its capability to support life. (2).

It is possible to give a "Trophic State" classification to aquatic environment according to algae and nutrient concentration and water condition. The parameters are summarized in Table 1.

Some professionals use the Trophic State Index (TSI) to describe the productivity and trophic state of aquatic environment. TSI is calculated on three different productivity measures: water transparency, chlorophyll

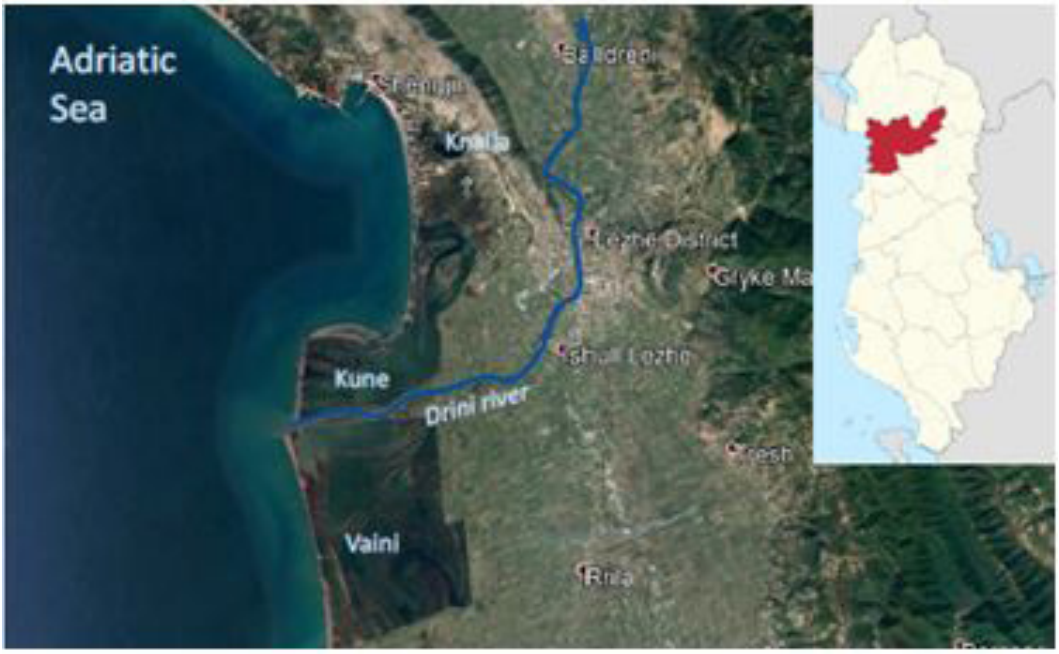

Fig.1/ Satellite view of the Kune-Vain lagoon (12). Source: Google Earth

'a' and total phosphorus (8).
Comparison of the TSI evaluated by the chlorophyll-a and phosphorus content, shown the same variation of the two parameters as more phosphorus causes more algae to grow, thus making water less clear (5).
The lagoons of the north-west of Albania represent one of the most important ecosystems of the territory in terms of biodiversity.
Kune-Vein is a natural reserve located in the district of Lezha (Picture 1).

Several years ago, this territory threatened to disappear, which explains the importance of taking swift action to stop its destruction. Over time, human interventions and climate change have led to a sharp increase in the salinization of the waters of the lagoon. As a result, there has been a slow but long degradation of its natural vegetation that has put at risk some animal species which inhabit the lagoon, including Pelecaniformes and Ciconiiformes. In addition, the increase in hunting and fishing activities even in forbidden seasons has put at risk other protected species. Some bird species such as the Cormorants, are persecuted because they are considered active competitors in fishing in the lagoon and along the Drin river. In addition to that, grazing has greatly increased: cows, sheep and goats are free to graze without the definition of specific boundaries thus destroying consistent portions of the natural vegetation. Furthermore the presence of factories in Lezha has further contributed to the degradation of the lagoon ecosystem due to the high phosphate discharges that occur directly in the course of the Drin river worsening water quality and therefore the same happens to the lagoon and the sea (7).

Objectives and Methodology

In order to have a clear and precise idea of the characteristics of an aquatic environment, such as a lagoon, it would be a good idea to monitor the water for long periods of time and at regular intervals, by adopting sampling and analysing methodologies. By acting this way, it is possible to understand how the ecosystem evolves according to seasonality and climate change. The sampling methodology must be carried out on a monthly schedule and they must be performed at different sampling representative spots of the lagoon environment. Initially, the sampling activity must be more frequent, providing an exhaustive representation of the lagoon's ecological conditions (2). Then it is possible to diminish the sampling frequency by retaining it as fixed on representative periods and factors, like season change or other impacting events. The biological parameters, in association with physic-chemical parameters, to be kept under constant control are:

- Determination of Chlorophyll-a concentration according to the acetone trichromatic methods (9)
- Phosphor content in water determined spectrophotometrically using the appropriate kit.
- Water turbidity determined by using of Sacchi disc.

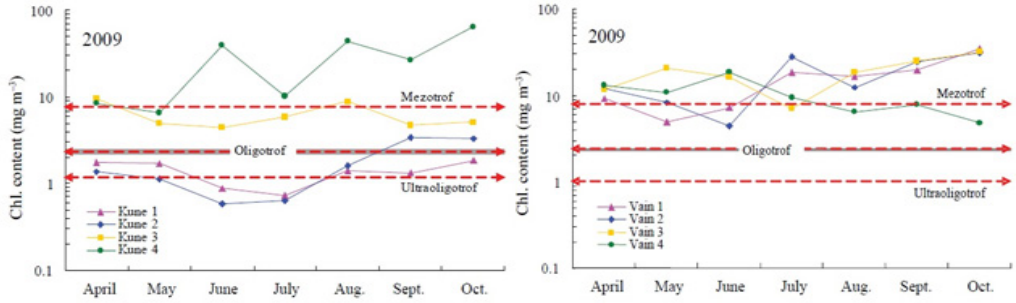

Fig. 2 / Dynamics of chlorophyll-a content in the Kune and Vein lagoon among the selected stations in 2009. Source: Ariola Bacu

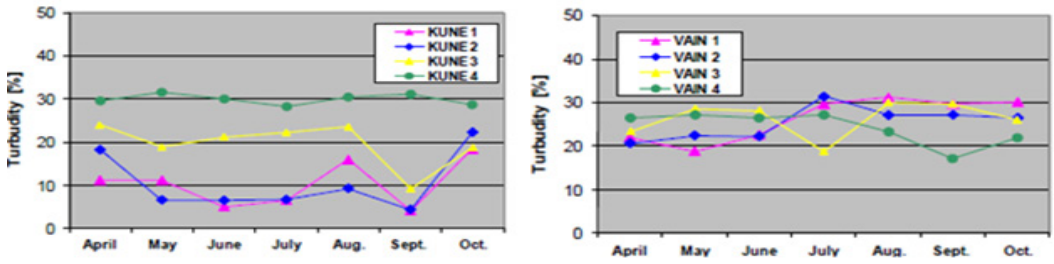

Fig. 3 / Variation of water turbidity in Kune - Vain lagoon among the selected stations in 2009 from April to October.(5)

Furthermore, the methodology has to grant the possibility of confrontation between different lagoon's environments and their trophic characteristics. In order to preserve the biodiversity of animals and plant, it would be a good idea to evaluate the survival capacity of the species, for example by carrying out a the census at least once per year.

Results and discussion

The assessment of the trophic status offers an overview of the quality of life of the waters of the lagoon on which also depends the terrestrial animal and vegetable life. Studies have shown that in Kune Vein lagoon, exists an oligotrophic (Kune) and eutrophic (Vein) states coexist given by the concentration levels of Chlorophyll-a (Picture 1) and the level of turbidity measured over time (Picture 2).

It is known that every alteration in an ecosystem can affect the biological community state, reducing its richness and determining the selection of more opportunistic species at the expense of more vulnerable ones.

To study the population's biodiversity and biological dynamics of the community in relation to the climate changes and anthropogenic influence becomes an important starting point to identify suitable biological markers -Bioindicators- which can determine the reaction of the resident organisms compared to the alteration of environmental conditions in which they use to live and multiply.

2000/60/EC Directive explains monitoring programs to follow in order to provide a complete framework of the water quality in the water basins and also it underlines the importance to assess early the communities' behaviour in lagoon as answer to the entity of the perturbation factors, searching for the specific environmental Bioindicators which represents useful tools to identify the trophic status of the lagoon waters because they can quantify the "biological productivity" and they can also evaluate the capability of this peculiar environment to support life.

It is not possible to define a standard protocol on the research of Bioindicators because transitional waters in general and coastal lagoons are naturally stressed environments, being subject to frequent changes in the ecosystem and to anthropogenic interventions. For this reason, it becomes important to define the specific hydro morphological context of the lagoon in which to contextualize biological indicators specific to that particular environment (6).

Conclusions

A well-defined monitoring program to be applied at short and long periods of time in different comparable spots of the lagoon can be useful to define a standardized protocol capable to identify early any risk condition. In association with TSI, it would be very useful to define parameters related to the climate change and the anthropization of the territory, factors that puts at risk the environmental integrity. All these parameters, if considered in their totality, allow to understand and possibly to predict the risk level of loss of

biodiversity for animal and plant species. The data obtained, when combined with the environmental parameters collected over time, might offer a complete picture of the dynamism of the changes in the ecosystem and the adaptability of the living species which inhabit that environment. It is important early understanding the development of a lagoon ecosystem because it makes the possibility to intervene quickly in case of need in order to prevent living species from becoming endangered.

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Excessive presence of Nitrogen and Phosphorus in the Drini River and their impact on the Kune-Vain lagoon ecosystem: how anthropization can affect biodiversity

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Abstract- *In the western part of Albania there are various examples of lagoons and wetlands ecosystems; the object of this manuscript is addressing the environmental conditions of The Kune-Vain Lagoon, located in proximity of the city of Lezhë and south of the Drini River and its delta and providing suggestions about its preservation: it has been calculated that about 10 million m3 of polluted water are released, in many ways, every year into the Drini River. Because of its biodiversity this land has both national and international protection status. However, the flux of contaminants and pollutants derived from anthropic activities is strongly affecting this transitional body of water which is located at the interface of the river and the Adriatic Sea. Due to human activities, mobile aqueous species of nitrogen (N) and phosphorous (P) have become an actual environmental issue because high levels of such chemical elements are linked to the eutrophication of the lagoon's waters, causing the proliferation of invasive species (mostly microorganisms, plants and crustaceans). As mentioned above a very high quantity of N and P from anthropogenic sources can infiltrate the ecosystem in many ways, like from mining activity, liquid and solid wastes from the urban aera of Lezhë, from farms and livestock, from fires and more. But the main cause of this problem is associated with the use that people make with soils and lands: the increment of fallow uncultivated areas from abandoned agricultural sites contribute indeed to the surface runoff, erosion and subsequent transport of N and P chemical species to the actually cultivated territory in which cultivation and managements practices for forage and cereals are present; this leads to ulterior release of soil particles that are rich in N and P chemicals compounds into the aqueous phase of the land. A very big portion of those aforementioned particles have been and still are depositing in the main area of the Kune-Vain Lagoon. The Lagoon is part of the coastal area, thus it is very important for economy, industry and tourism and it also act as a 'buffer zone' between the sea and the agricultural areas because of its biological function as natural filter for nutrients overload through its characteristic vegetation. Nevertheless, the Kune-Vain lagoon waters show a clear tendency toward degradation and something must be done to prevent heavy ecological issues. It would be useful to constantly monitor the chemical composition and the state of the waters. Also, the employment of meanings of phytoremediation would represent a practical, cheap and environmental-friendly way to help the process of recovery toward better environmental conditions of the Kune-Vain Lagoon.*

Keywords: Anthropization; Eutrophication; Biodiversity; Lagoon; Ecosystem

The abundance and richness of freshwater resources is a natural characteristic of Albania, however, over time, and especially roughly during the last 30 years, a gradual deterioration in terms of its quality and pollutant quantity has been more and more evident. Many factors characterized by a social, economic and anthropogenic nature, played a pivotal role to the determination of the actual environmental

Fig. 1/ Kune-Vain Lagoon, Lezhë

water conditions, as listed below [Sulçe, Rroco, Malltezi, Shallari, Libohova, Sinaj and Qafoku, 2018: 279-280]:

▪ Social/economics factors: as the change from a one-party system to a democratic system that was preceded by an important downturn in terms of internal economy.

▪Anthropogenic factors: such as modification to the topographical and hydrological characteristics of the territory due to human interventions in order to exploit natural resources for agriculture, mining, factories, urbanization and other activities which led to a deep environmental impact.

▪ Ecological factors: most of them are consequential to the aforementioned land exploitation. They include the pollution and consequent eutrophication of water resources and the draining of freshwater resources for agricultural and industrial purposes.

All these factors described above are useful to pinpoint the main scope of this manuscript: addressing the deteriorating conditions of a specific location: The Kune-Vain Lagoon, a transitional body of water which is located at the interface of the river and the Adriatic Sea located in proximity of the city of Lezhë and south of the Drini River and his delta (Fig1, www.intoalbania.com, photo by Gjergj Figuri).

This environment has both national and international protection status due to the fact it is a natural habitat for many species of wild animals, such as the golden jackal (Canis aureus), the pink flamingo (Phoenicopterus roseus), the kingfisher (Accedo attis) and the curly pelican (Pelicanus crispus). The Kune-Vain lagoon is an ecosystem with a delicate equilibrium which is menaced because of the flux, due to human activities, of pollutants from mobile aqueous species of nitrogen (N) and phosphorous (P) that causes the dangerous phenomenon of water eutrophication [Yin, Wang and Zhao, 2018: 231]. This is linked to an overabundance of many invasive species of microalgae and bacteria whose excessive presence essentially cause a deficiency in oxygen levels in the water of the lagoon [Awal, 2019:1312]. This lack of oxygen and subsequent proliferation of those microorganisms paves the way for the arrival and spread of other invasive species like the Atlantic blue crab (Callinectes sapidus), an aggressive and very fecund crustacean native to the western coasts of the Atlantic Ocean which inhabits lagoons and coastal areas [Mancinelli, Chainho, Cilenti, Falco, Kapiris, Katselis and Ribeiro, 2017:01] and it is now menacing the ecosystem of the Kune-Vain lagoon by disrupting the natural food chain and therefore causing a significative loss in terms biodiversity which characterizes this location (Fig2, www.theguardian.com, photo by Jean Claude Cartin/Biosphoto).

The urban area of the city of Lezhë (Fig3, www.konica.al) with a population of 113.535 [lezha.gov.al, 2019:01], is located in proximity of the Kune-Vain Lagoon, becoming an important source for chemical pollutants that infiltrates the ecosystem in many ways.

Most of them are associated with human activities that can be distinguished

Fig. 2/ A male blue crab hunting down a prey

as "point" and "non-point" sources [Carpenter, Caraco, Correll, Howarth, Sharpley and Smith, 1998: 560), as listed below:

POINT SOURCES:

- Wastewater effluent (both from municipal and industrial sites)
- Runoff and leachate from waste disposal sites
- Runoff and infiltration from animal feedlots
- Runoff from mines, oil fields, unsewered industrial sites
- Storm sewer outfalls from cities with a population > 100.000
- Overflows of combined storm and sanitary sewers
- Runoff from construction sites

NON-POINT SOURCES

- Runoff from agriculture (including return flow from irrigated agriculture)
- Runoff from pasture and range
- Urban runoff from unsewered areas and sewered areas with a population >100.000
- Septic tank leachate and runoff from failed septic systems
- Runoff from construction sites
- Runoff from abandoned mines
- Atmospheric deposition over a water surface
- Activities on land that generate contaminants, such as logging, wetland conversion, construction and development of land or waterways

All the aforementioned factors are still today contributing to change the ecological conditions of the Kune-Vain Lagoon, but some of them play a greater role than the others in releasing N and P chemical species into its waters. It has been calculated that about 10 million m3 of polluted water are released, in many ways, every year into the Drini River [Cullaj, Hasko, Miho, Schanz, Brandl, Bachofen, 2005:139]. Nevertheless, it has to be pointed out that evaluating the water quality condition and its eutrophic status without established thresholds for nutrient concentrations can be very challenging [Clune, Crawford, Boyer, 2020:02]. One of the main causes is associated with the use of land and soil for agricultural purposes and the abandonment of those sites after their exploitation or because they become unsuitable for cultivation: the increasing rate of uncultivated fallow areas of abandoned agricultural sites significantly contribute to the instauration of phenomena like erosion which causes the subsequent runoff of N and P chemical species to streams [Sulçe, Rroco, Malltezi, Shallari, Libohova, Sinaj and Qafoku, 2018:284] and waters that are used for irrigation of other cultivated areas in which fertilization, cultivation and management practices for forage and cereals are present. This leads to an ulterior release of soil particles that are rich in N and P chemical compounds into the aqueous phase of the land. The same process of chemical discharging originates from other main sources such as industrial and mining sites (either still in use or abandoned), making the water surrounding the urban area of Lezhë and its wild habitats (such as the coasts and the Kune-Vain Lagoon) polluted by chemical-organic meanings (Fig4, Environmental International, issue

Fig. 3/ Aerial view of the urban area of Lezhë and its interface with the lagoon and the Adriatic Sea

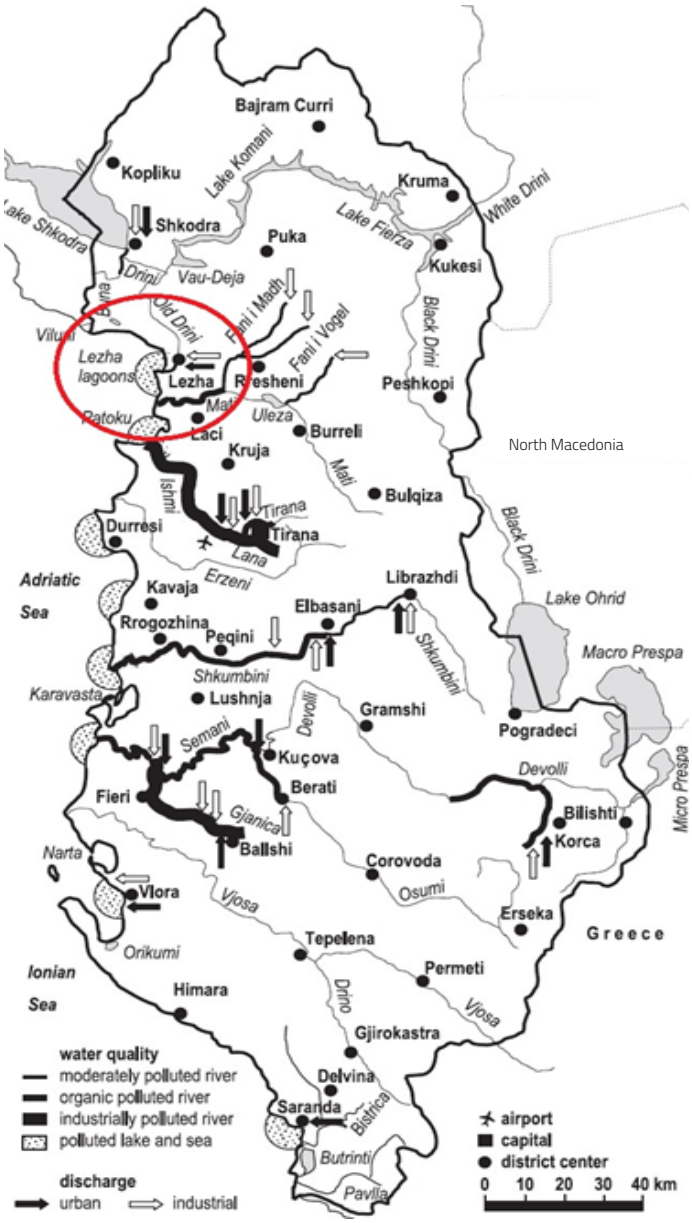

Fig. 4 / Hydrogeological map of the main polluting sites of Albania, highlighting the area of Lezhë. Source: Reinhard Bachofen

n°31:2005; drawn modified from UNEP, 2000).

This overuse and abuse of environmental resources is aimed to a rapid economic development which is often uncontrolled and unsustainable and does not protect from its threats the special areas, like the Kune-Vain Lagoon, that are symbols of the Albanian natural environment: as already stated the pollution problems of this aquatic ecosystem are linked to urban development, industrial waste management and land erosion among other factors [Cullaj, Hasko, Miho, Schanz, Brandl and Bachofen, 2005:139]. A proper way to assess the water conditions about its relative quantity of pollutants might be found in the USEPA guidelines "Nutrient Criteria Technical Guidance Manual: Rivers and Streams" which proposes and describes in details several steps to keep them monitored [Buck, Denton, Dodds, Fisher, Flemer, Hart, Parker, Porter, Rector, Steinman, Stevenson, Stoner, Tillman, Wang, Watson, Welch, 2000: XIII]:

- Identify water quality needs and goals with regard to managing nutrient enrichment problems.
- Classify rivers and streams first by type, and then by trophic status.
- Select variables for monitoring nutrients, algae, macrophytes, and their impacts.
- Design sampling program for monitoring nutrients and algal biomass in rivers and streams.
- Collect data and build database.
- Analyze data.
- Develop criteria based on reference condition and data analyses.
- Implement nutrient control strategies.
- Monitor effectiveness of nutrient control strategies and reassess the validity of nutrient criteria.

Furthermore, the employment of meanings of phytoremediation would represent a practical, cheap and environmental-friendly way to help the process of recovery toward better environmental conditions of the Kune-Vain Lagoon: by artificially increasing the number of the already existent species of macrophytes like wild reeds of the family of Phragmites spp as they are very efficient in adsorbing and therefore eliminating the excessive nutrients chemical species which are present in the water of the Kune-Vain Lagoon[Wilkins, Fallowfield and Baring, 2022:02].

In conclusion: the main scope of this manuscript is to address the environmental conditions of The Kune-Vain Lagoon, to provide suggestions about its preservation and to give consciousness about the relevance of this environment which is pivotal both in terms of ecological and economic value. Since the Kune-Vain Lagoon represents a consistent part of the coastal area it must be considered as very important for economy, industry and tourism. But its role does not ends there: it also act as a 'buffer zone' between the sea and the agricultural, urban and industrial areas because of its biological function as acting as natural filter for nutrients chemical species overload by N and P sources, a function that is also carried out by means of phytoremediation through is characteristic vegetation which is composed, among other species, of macrophytes like reeds (Phragmites spp.) which are efficient in adsorbing nutrients and contaminants into their roots. Nevertheless, the Kune-Vain lagoon waters show a clear tendency toward degradation and something must be done to at least monitor their conditions.

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5

Proposals for innovative housing models that reflect the needs of contemporary society.

Proactive approaches through environmental and architectural elements towards sustainable solutions for post pandemic city. Case study of Lezha

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Abstract- *Towards sustainable solutions for post pandemic city is analyzed the city of Lezha - as case study, by splitting it into three zones, whose two are on city's side and one on the beach side, in terms of buildings, theirs foot within terrain's morphology, the roads grid, etc. Some of identified problems regarding environment and post pandemic consequences appeared to be: air pollution, humidity, lack of water management, and others, settled priorities for an environment, climate and health research agenda in the EU by adopting a holistic and systemic approach in the face of global environmental changes . In relation to the sustainable form of constructions within a plot, based on the research of the previous workshop on the Sustainability of the Form, is proposed to intervene with interdisciplinary approaches to achieving sustainability in terms of from and environmental factors together. Since it is almost impossible to propose demolitions and other rigid solutions that could cause many other aspects too, it is crucial to approach with smart solutions. Thus, resulting the analysis of environmental characteristics of the zones and features together, by linking them with smart sustainable architecture's solutions. The new areas or those to be built by having a certain angle of orientation, intervention on building heights and where possible open corridors for natural ventilation is hypothetical concept. This result as an approach towards hygienic reasons of cleaning the city from polluted air based on studies of buildings and natural characteristics of the environment tailors a lot components towards sustainable solution among settled priorities for an environment. In addition, closing in blocks where it is possible, to avoid the negative phenomena of un-sustainable form, through the proposals of new forms will also contribute to the environmental hygienic aspect - as a factor directly related to the recent pandemic. Actually, the proposal to intervene on the zones by different approaches referring potentials of natural elements like wind, orientation, ventilation and insulation conform terrain morphology, environmental characteristics of the zone - based on blocks and plots - to achieve sustainability through natural elements and existing buildings considering the last pandemic better management and overall contribution on efficiency. The pandemics as crisis leads on opportunities in terms of being proactive when thinking and designing the same way this pandemic exposed the differences and popped up the inequalities reflected also on architecture, society, environment and economics. The crisis and natural catastrophes should serve as an alert on design and planning in order to avoid or at least manage easier the situations like last pandemic.*

Keywords: Pandemics, Sustainability, Form, Environment, Interdisciplinary approaches

State of art

The city of Lezha is analyzed as case study, by splitting it into three zones, whose two are on city's side and one on the beach side, in terms of buildings, theirs foot within terrain's morphology, the roads grid, etc. The impact of the research could be a standardized template or recommendations for sustainable

solutions which are generated from the findings with specific methodology, different and combined methods, which contribute as well to the similar contexts for sustainable urban form as well. As an example, the Architectural Heritage was long absent from the mainstream sustainable development debate despite its crucial importance to societies and the wide acknowledgment of its potential to contribute to many aspects of the city, particularly in the sustainability of form. The concept of sustainable development has been the main topic of many international discussions in terms of economic, social, and environmental productivity of the city for a long time now but, the focus stands on how can sustainable strategies be found- through methodologies for post-pandemic cities, in this case particularly city of Lezhë.

From the geometric, geographical, and ecological point of view, Lezha is a harmonious kaleidoscope of nature, almost like an unparalleled ecological principality, where the mountain, the field, the forest, the archeological and historical monuments, the lagoon and the sea, constitute a prominent unity.

The ancient city of Lezha is located on a dual terrain: hilly and plain, an area of 20 Ha, surrounded by walls. The town planning of the fortified city has four main areas: 1. the area of the upper part, located at the top of the hill; 2. the area of the middle part, lying down on the hilly slopes; 3. the area of the lower part below the hill; and 4. the riverside area with the bed of the river the Drin and the western wall of the city.

Each of these areas has had a special and at the same time interconnected function. All urban areas, from 1-4, protected and respected the natural position, contented state institutions which were located within densely populated territory, including craft-commercial centers, ended below to the river port, which connected ancient Lezha with all sea routes of the Adriatic. An integral part of Lezha was the Acropolis, which was the culmination and most special of the city's defense system. The urban plan of Lezha is special and unrepeatable in any of the Illyrian cities known to date. Due to its geographical position with wide access to the sea and generally low relief, Lezha has a mild prevailing climate of the Mediterranean type, characterized by hot and dry summers, mild and wet winters in the lower part and the city, and wet and cold winters in the mountainous area.

During the analysis from the field visit, into two parts of Lezha, within a part of the city and at the part of the beach, are identified the morphological and environmental characteristics of the city, type of constructions, social barriers and other factors with potential for development, including gaps that hinder development in formal terms and hygienic aspect of the city.

In order to have greater diversity and to have more relevant study results, were chosen three different locations with different characteristics in the city of Lezha. These locations were analyzed in terms of morphological and environmental attributes, through visual maps, axonometries, building typologies

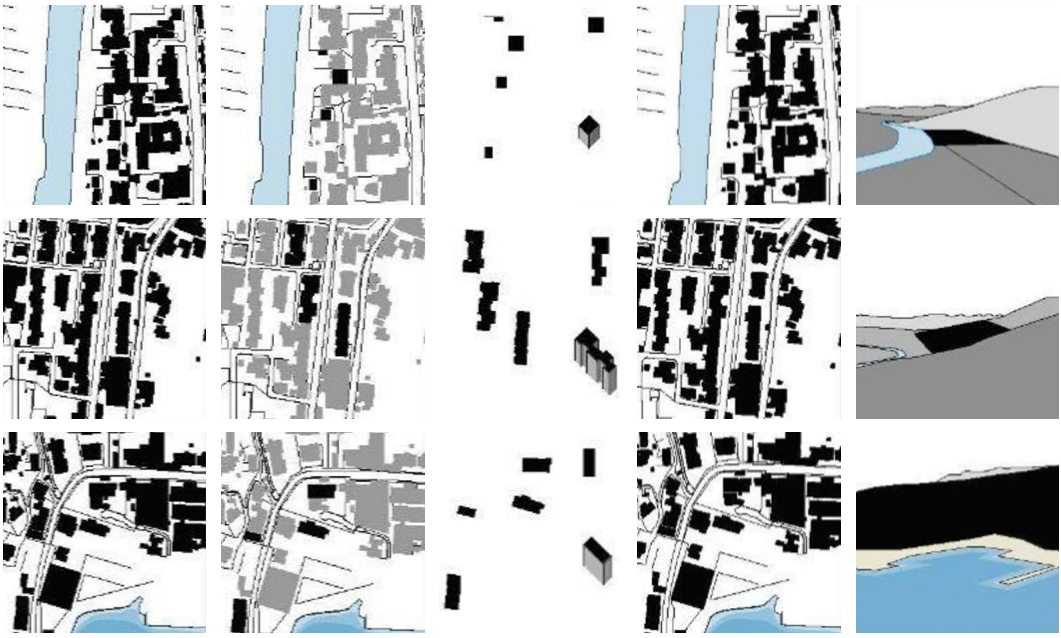


Fig. 1 / Site analysis through visual maps, views, axonometries. Building typologies and terrain morphology of the city of Lezha. Source/ by author RZ

and terrain morphologies (shown on figure 1).

As can be seen from the detached sequences in some parts of the city, Lezha is characterized by the typology of individual house living and collective housing in the block. Dwelling houses are fully located in an attached manner depending on the destination, construction time, and empty spaces are filled over the time both, individual buildings and collective blocks. As a whole, it can be considered as compact site, with some unused spaces and with dead end in some parts. In the part of collective blocks, this phenomenon is avoided and exploited more rationally. Where emptiness has occurred, it is filled over time, while the road network differs, from individual housing to more regular with easier access to public areas, to be continued with the part of the sea shore. Depending on the morphology of the terrain and landscapes the road network is developed based on the orientation and configuration of the terrain and built units with mixed functions (as show in figure 2).

In terms of sustainability of form, it is necessary to present different attitudes and studies of form/morphology approaches that have been developed in recent decades, from the historical-geographical approach (promoted by the Conzenian School) to the logical process type approach (promoted by the Muratorian School) always combining them with the work on site and previous studies regarding the image of the city by K. Lynch, then the architecture of the city A. Rossi, to continue with "Studi for una operante storia urbana di Venezia" by S. Muratori. This is to comparatively analyze the theory and studies with the case study, the city of Lezha, and the parameters that have influenced or are potential for the improvement of the post-pandemic city.

According to Muratori at " Studi Per Una Operante Storia Urbana Di Venezia" the basic urban concepts are urban tissue, organism and operational history. It has been pointed out that one element can never be identified without including the context of the place which implies the importance of the connection between history and planning. On the other hand, K. Lynch through the study of three different cities in America, differentiates the urban elements to less extent and under the lens of experiencing to the view of the city. They are paths, nodes, landmarks, districts and edges. Through the interconnection of such elements, the creation of an urban form is suggested.

Then, as far as the experience of the city is concerned, Muratori, who connects the experience with the history of the city and its design, has almost the same approach as Lynch, who suggests that the experience of the city belongs to the citizen himself. A. Rossi in his book "Architettura Della Citta" divides the buildings of a city into urban facts and minor buildings. According to Rossi, the city is formed by two instances, as by combining typologies with networks of urban artifacts and residential buildings. Rossi emphasizes that the sustainability of the city depends conditionally on the networks of urban facts as propelling elements and that have dominated time, history with their presence as artifacts

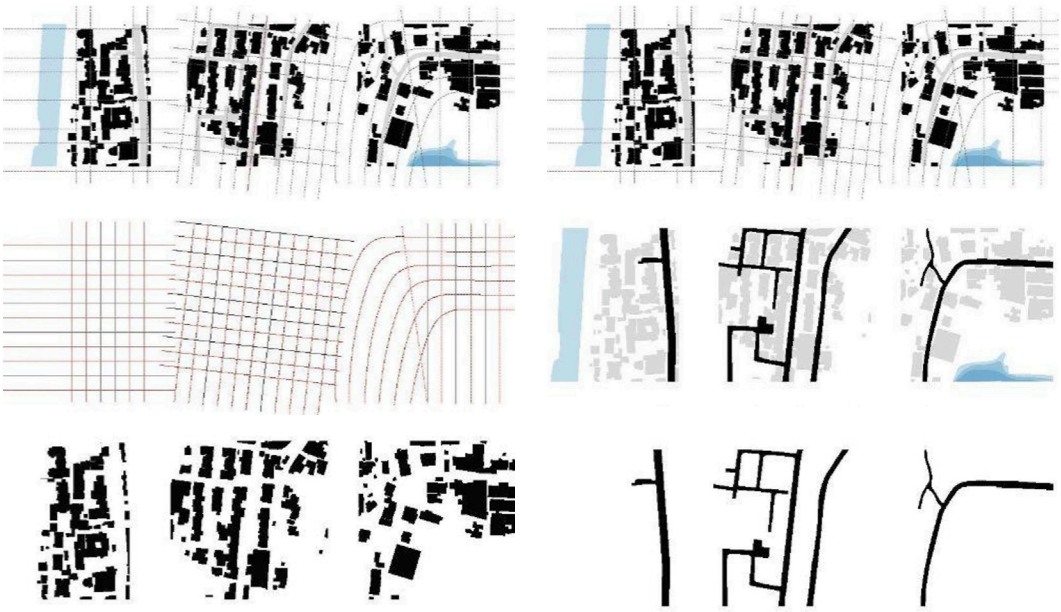


Fig. 2 / Site analysis for three chosen zones, including grids, roads, build typologies and terrain morphology. Source/ author RZ

and have influenced the sustainability of form as well as the very form of the city.
The example of Lezha and those three moments captured from the city, are analyzed and find out that some factors influenced and affected the sustainability of form and are directly or indirectly related to the development of the city, but related to the performance of the city. Differences or inequalities of varying degrees in comparison, such as urban and other aspect, seem to be more differentiated throughout the pandemic period and requires the treatment in the post-pandemic period, taking into account the state of the city and further development. Intervention in different areas to create compactness, which provides the formal but also the functional stability turns out to be a developmental / improving element in mitigating social inequalities that are created by the lack of sustainability of form, then the economic development aspect in terms of the functions that these buildings carry, the hygienic aspect and that of the environment - for the improvement of the quality of life and the optimization of the expenses. These are some of the main pillars that have been noticed during the pandemic period that have aggravated the current situation in terms of urban, architectural, formal, and social point of view.

Objectives

The main objectives are to intervene in the city of Lezha with different approaches in order to improve the city in its formal aspect, to achieve the sustainability of form of the city in function to environmental elements, in order to avoid various threats, such as a pandemic issue, which later continues to be present by identifying different scales risks and opportunities through different approaches in terms of morphological aspect of the city.
Based on latest researches, climate change, which have direct effects on the distribution of pathogens, their animal reservoirs and vectors, is recognized as a key driver of epidemic emergence (Boissier et al., 2016, Ryan et al., 2019, Caminade et al., 2019, Bartlow et al., 2019). While there is an evidence that climate conditions and air pollution may also facilitate viral spread (Woodby et al., 2020, Karan et al., 2020, O'Reilly et al., 2020), but additional investigations was needed. Features of the built environment, from crowded housing to inadequate ventilation in commercial spaces and mass transit vehicles, may facilitate virus transmission lied to this research, which is needed not only to elucidate these effects but to reconcile disease control with broader goals in housing, transport, and other sectors. A better understanding of these critical aspects is to improve both, the prospects for prevention and to develop predictive models for public health risk management. For instance, the dual role of indoor air quality in both environmental contamination and viral spread, which requires more research focus, as well as innovative solutions for mitigation, including development of air purification technologies (Domínguez-Amarillo et al. 2020).

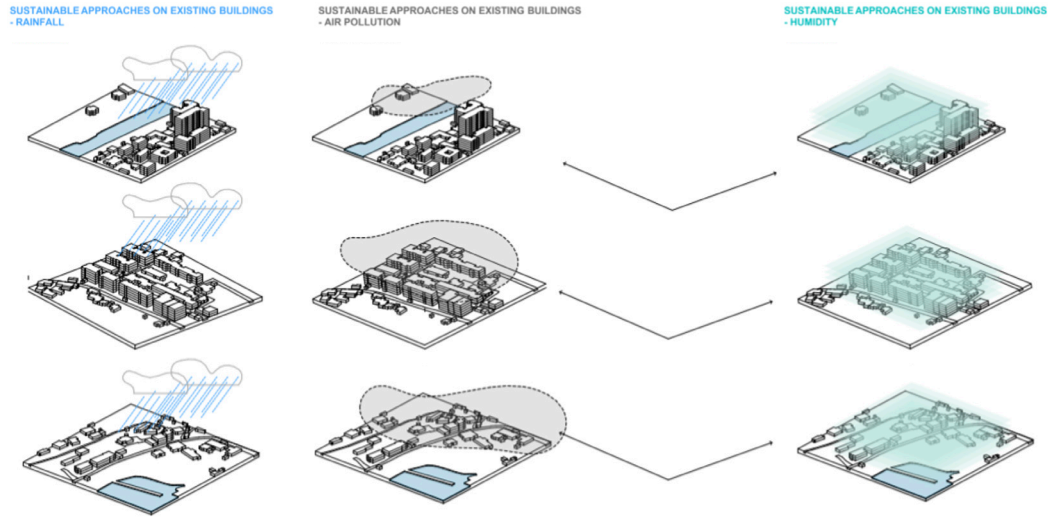


Fig. 3 / Sustainability resilience and post pandemic effect in a schematic view, with possible sustainable approaches. Source/ The author RZ

A major challenge in responding to COVID is balancing reduced economic activity to control disease spread, and restored economic activity to avoid the harsh social and health consequences of the shutdown. Recovery plans are currently being discussed or implemented. The environmental and health impacts of those plans is not clearly foreseen.

For clarification, hence the COVID-19 has a long-lasting impact to the environmental health field could be open new research perspectives and policy needs. Thus, there is a need to identify and implement policies that will bring short-term and long-term benefits to health and sustainability.

The research continues with the identification of problems such as building typologies along with terrain morphology, orientation of buildings and additional indicators such as air pollution, humidity especially in the beach area. In the Figure 2 are schematically seen the analysis, made regarding the typologies of buildings, roads, block shape and street grids.

On the other hand, there opportunities for the city of Lezha too, by further developing on the principles of sustainable development in terms of use of natural resources to minimize the use of consumable resources, at the same time contributing to air quality, water and consequently improving of quality of life. One of these priorities would be to intervene in the system of collection and reuse of rainwater, systems presented in schemes which would help in sustainable development then, interventions in terms of solar panels to generate electricity and increase insulation and ventilation to improve the quality of life starting from even the smallest housing units (findings from interactive "Sustainability of (Urban) Form"*, together with field professionals and environmentalists). As a result, the addition of multifunctional or flexible spaces which can be used by the community of a residential block for example serves as a multi-purpose space such as recreation, work, entertainment, etc. This is also shown schematically in figure 3.

Methodology

Taking into consideration: (i) the already built environment (ii) the problems related to the pandemic situation and (iii) highlighting a paragraph from Aldo Rossi's book "The Architecture of the City" on urban artifacts/ monuments; can be concluded that those structures, in series, contribute to morphologic sustainability of the city, despite the function that may change through time, hence the individuality, memory, place and design are the parameters that matters. It is only important that they are present as an artifact and serve as collective memory, contribute to the future development of the city and constitute an important urban focus. These constructions, whatever they are, creates the place and the identity of a country, contributing as development elements, as part of a development chain of the city. So, from this point of view, radical interventions are almost impossible, but interventions with a sustainable approach may be appropriate in terms of improving the quality of life in these areas in Lezha by using the built, natural and architectural

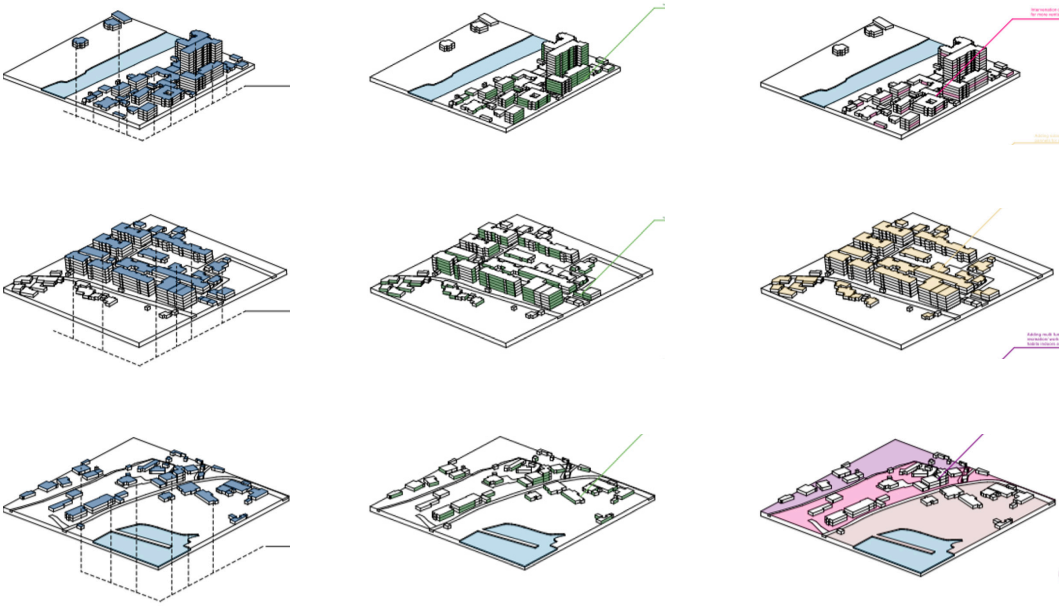


Fig.4 / a) Analysis on sustainability of form in terms of urban blocks and buildings, environmental attribute. Source/ The author RZ

potential towards contributing in the prevention of various threats in terms of air quality, hygiene in the city and the visual aspect of the city, i.e. constructions together with the morphology of the city. On the other hand, based on the principles of stable blocks and sustainable shapes analyzed in the workshop "Sustainability of (Urban) Form" * it has resulted that closed blocks are more stable in terms of shape. This is seen in the analysis in fig. 4. In figure 4 a) are shown the problems of air pollution or even humidity in the areas studied during the workshop are arranged in a diagrammatic form. Together with the analysis of the shape of the plot, and the buildings, elaborated earlier, in these parts it is possible to intervene by architectural approaches - the shape of the objects in conjunction with the natural elements, such as: the wind, which helps to clean the air depending on the direction given to the building and the creation of natural corridors for ventilation, sunning, etc. This is directly related to the analysis of the building and the plot shapes. Those analyses are done during the first part of the workshop.
In figure 4 b) are shown the analyzes of the sustainable ideal form of the plot, which are presented in a diagrammatic form together with the shapes/forms of the construction and from the shapes/ forms that have turned out to be sustainable, variations or so-called morphemes, created by using matrices with basic sustainable form of the building and the prefix, the suffix or both together, which are added to the basic form. These sustainable variations forms created the plot-building that could can be repeated in different degrees, by creating a sustainable area based on the analyzed elements and the results of these analyses. These variables are divided into static and variable elements. Static results are the relationship between the plot and the form together with their variations, while variables are the natural factors and features and vary from place to place (climate, winds, sunshine, terrain morphology, etc.) based on their combination for specific cases of stable morphemes result.
Consequently, the orientation and other sustainable elements analyzed above are combined in this framework of sustainable approaches that gives more comprehensive results in terms of the analyzed areas as well as a pro-active approach to future threats, by following a study and the point of view from D. Keplinger on building orientation and its importance:

"Once a building is poorly located or faultily oriented, the opportunity for correction is gone forever, or the cost is prohibitive. A building properly designed and oriented can greatly reduce the demands on the heating and cooling system, in turn reducing the needed area of expensive solar collectors. Reducing the initial costs of solar systems will speed acceptance and implementation of solar energy utilization." Keplinger 1978: 577-585

In particular, the contribution of urban morphology are the basic aspects of our collective life in the city, especially to the social, economic and ecological aspects.

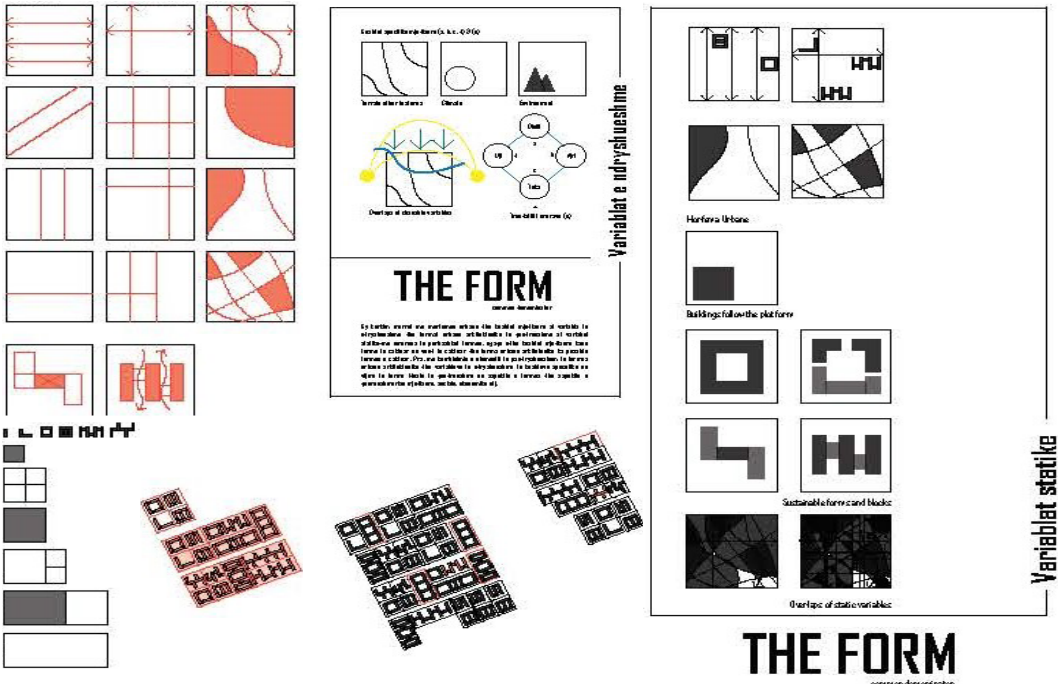


Fig.4 / b) features and their indications together with terrain morphology. Source/ The author RZ

With practical realization of this goal in mind, five specific themes are selected from three broad aspects: public health, social justice, heritage tourism, climate change and energy. The key and possible approach to a sustainable solution is how to strengthen the communication channel between each of these themes and the field of urban morphology – with all aspects of urban phenomenon and elements mentioned (Rossi, Muratori, Lynch Conzenian School).

While, based on previous theories, the morphology and sustainability depends on factors such as: context, history, planning, urban artifacts, street layouts, and grids in different morphologies, terrain, and interconnections, i.e. phenomena, physical and formal elements - the missing factors must be identified or dominate in these areas. This is a way of achieving a sustainable balance and form. This addresses identifying specific problems and provides interdisciplinary proposals in the analyzed zones which increases the quality of life- consequently, sustainability is long-term and proactive in preventing negative phenomena with wider impact. The sustainability of form depends on several phenomena and factors in the time function but, it is possible to partially intervene in the improvement or upgrade of specific parameters in achieving this sustainability.

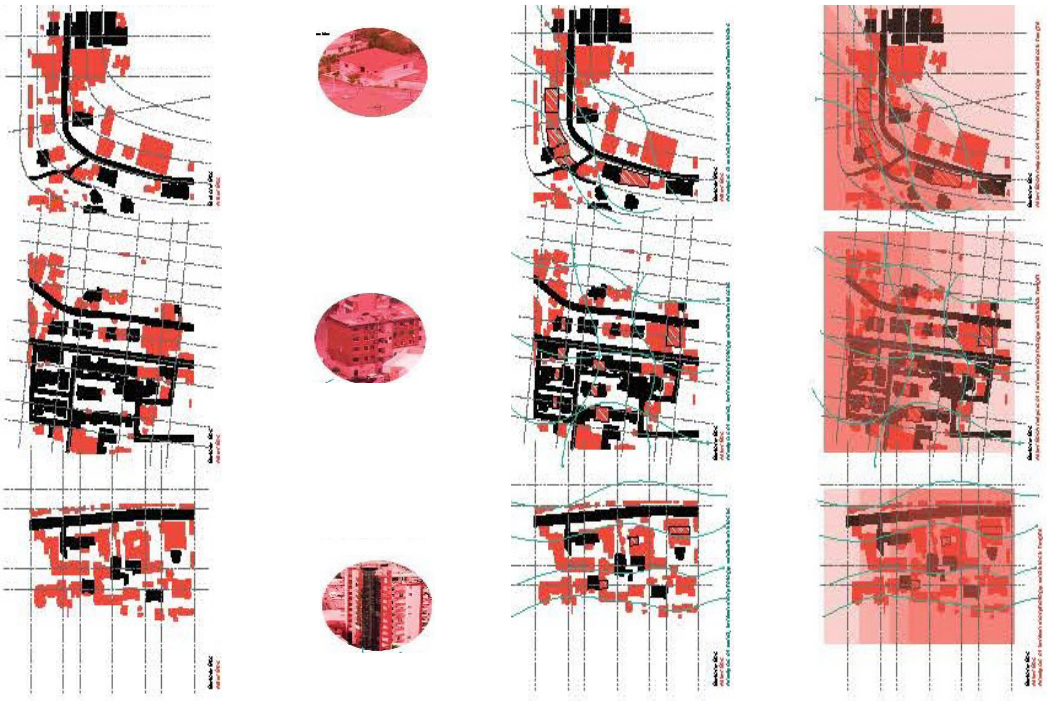
Results

The proposal is to intervene on the zones by different approaches regarding natural elements like wind, orientation, ventilation and insulation conform terrain morphology, environmental characteristics of the zone - based on blocks and plots - to achieve sustainability through natural elements and existing buildings considering the last pandemic better management and overall contribution on efficiency. The pandemics as crisis leads on opportunities in terms of being proactive when thinking and designing the same way this pandemic exposed the differences and popped up the inequalities reflected also on architecture, society, environment and economics. The crisis and natural catastrophes should serve as an alert on design and planning in order to avoid or at least manage easier the situations like last pandemic.

Conclusions and discussion

This study contributes to strengthening the communication channel between each of these themes mentioned and the field of urban morphology with a particular emphasis in city of Lezha and the zones studied through the workshop.

This depends on the ability to effectively analyze existing urban forms and design new urban forms, and to better understand the characteristics of each of these elements and how they can be combined. Especially the post-pandemic period served as a positive parameter/ dominator that raised questions and problems in urban morphology, our cities, possible threats and opportunities. The solutions are variable depending on specific areas and their characteristic, but the main issue remains the same – the approach towards sustainable solutions that offer efficient and quality ways of living or upgrading the city into long term propelling mechanism.



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PhD Workshop (2021) The Sustainability of (Urban) Form, POLIS University

Strategies to adapt and update the existing residential building stock of Lezha region in the post Covid-19 pandemic era.

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DOI: 10.37199/o41008113

Abstract- *Towards sustainable solutions for post pandemic city is analyzed the city of Lezha - as case Since its beginning, the Covid-19 pandemic changed most of the aspects of human life and, specifically, has resulted in a disruptive transformation of the social interactions. As it is well known, the largest part of the built spaces has been shaped to ensure these interactions and, as consequence, sanitary prevention measures (minimum interpersonal distance of one meter and half to keep in public spaces or the attendance of school from home, working from home) have been having a disruptive impact on the spaces inhabited by humans until now. Narrowing down the field to the built environment, at the scale of the residential buildings, this article investigates how, in the of region of Lezha (Albania), both in the pandemic and post-pandemic scenario, the reconfiguration of the home spaces can play a significant role in protecting residents from the disease. In this context, the two main key aspects of the houses analyzed in the article are essential to face those transformations of built environment due to the pandemic: the spatial transformation in terms of size, adaptability, and flexibility of the layout of the dwellings and the improvement of environmental quality and comfort of the dwellings. Starting from data available from the Census 2011 for the region of Lezha, the spatial, constructive and environmental features of the most representative existing building types have been analyzed, identifying the ones that have to be improved. From the data collected by this analysis, general design support guidelines to adapt and update the existing residential Lezha region building stock to the new living needs imposed by Covid-19 pandemic have been developed, addressed mainly to local authorities and building users.*

State of art. Post-pandemic new housing needs and requirements- The spread of COVID-19 pandemic altered living habits and housing needs of people all over the world, in particular, in the cities where more than 90% of cases happened, and determined significant modification of the design of residential buildings (Tokazhanov et al., 2020). Most housing spaces were not designed to effectively reduce virus transmission and to be transformed into workplaces, schools, or gyms. In fact, new housing needs mainly concern home working, home schooling and self-isolation in case of infection (Capolongo et al., 2020). For these reason, effective reconfiguration of the dwelling layout, for example with mobile and soundproof partitions, are aimed at improving flexibility and adaptability of the rooms, limiting the interference of multiple different activities carried out simultaneously by more than one user, guaranteeing their privacy and safety (Quaglio, Todella and Lami, 2021).

As for indoor environmental quality improvement, housing ventilation and lightning are the parameters that mostly incide on the dwelling adaptation interventions. Due to airborne transmission of the virus, implementing efficient ventilation systems is essential (Lipinski et al., 2020). Natural ventilation is more effective to reduce contaminated air than fan driven air movement (Dietz et al., 2020) while mechanical ventilation systems must be equipped with appropriate

purification filters (Elsaid and Ahmed, 2021). Plants are also energy-efficient air filters and increase user perception of the contact with nature (Moya et al., 2019). As for building lightning, it is important to maximize the exposure to sunlight (Saelland, Pajuste and Hansen, 2020), also expanding the fenestration of the dwellings, in combination with a correct use of light colors for internal surfaces to control the reflection. View of the neighborhood and green areas can significantly enhance user visual comfort (Berto et al., 2015).

Residential building stock of Lezha region

The data about residential building stock of Lezha region have been collected from the Census 2011 (INSTAT Albania, 2011) and, starting from those, deductions have been made about the adaptation of the dwellings to new housing needs before mentioned. There are 30153 residential buildings and 45419 housing units. The 70% of them (31589) is inhabited, while the 30% is uninhabited (13830). On average, there are 2,95 inhabitants per housing unit. Specifically, the 22% (6883) of the housing units is inhabited by 1 or 2 people, the 37% (11664) by 3 or 4 and the 41% (13062) by more than 5 people. Indeed, in general, the 78% of the housing units (24706) is inhabited by more than 3 people. Housing units smaller than 40 sqm are 8871 (28% of the total), between 40 and 69 sqm are 13324 (42%), between 70 and 99 are 6022 (19%) and bigger than 100 sqm are 3372 (11%). About the housing units smaller than 40 sqm, the 25% (2228) of these are inhabited by 1 or 2 people, the 39% (3443) by 3 or 4 people (10 sqm/inhabitant), and the 36% (3150) by more than 5 people (8 sqm/inhabitant) *. About the housing units between 40 sqm and 69, the 21% (2742) of these are inhabited by 1 or 2 people, the 37% (4920) by 3 or 4 people and the 42% (5662) by more than 5 people (10 sqm/inhabitant) **. Thus, in some cases, the average residential surface per inhabitant is already limited and, consequently, further interventions of dwelling adaptation could be complex to be implemented.

Residential building typologies

Residential buildings are classified into four typologies: detached house (25222, 84% of the total amount of buildings), semi-detached house (3106, 10%), row house (946, 3%) and apartment building (879, 3%). In detached house are located 25222 dwellings (48% of the total amount of dwellings), in semi-detached house 6212 dwellings (12%), in row house 3311 dwellings (6%) and in apartment building 17844 dwellings (34%)***. Detached house and apartment building are the most diffuse typologies and contain the largest amount of the dwellings. They were mainly built after 1991 by private initiative, with relevant variety of construction techniques and quality of materials. In fact, including also other building typologies, to update this building stock to post pandemic housing needs, a case by case analysis should be carried out, identifying the best approach of the intervention.

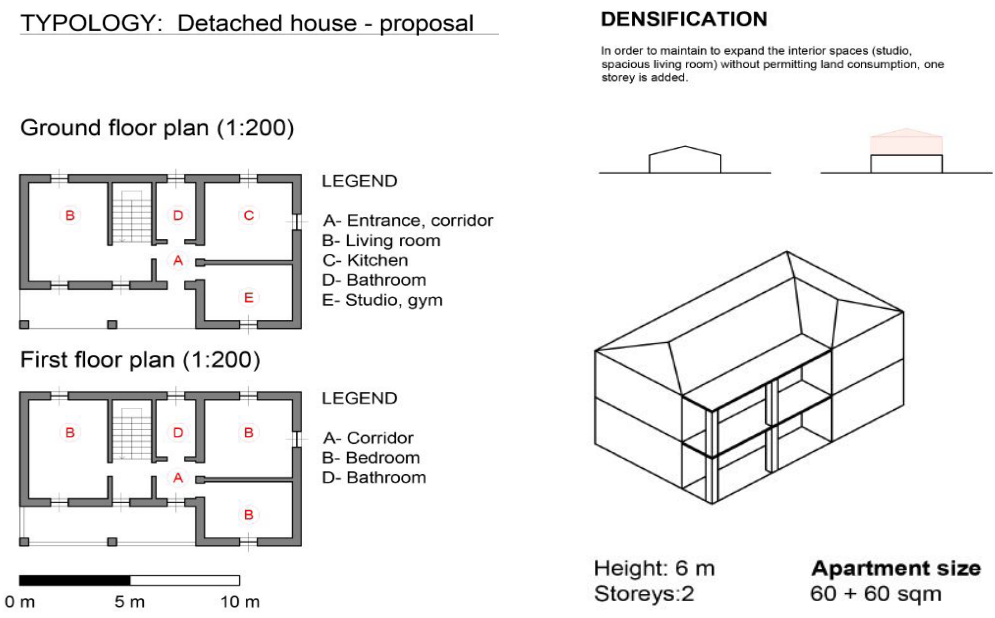

Fig. 1 / Tyopology plan- Detached house, Source: Author

Methodology and objectives

The aim of this article is to provide design support guidelines to update the residential building stock of Lezha region, according to the needs that occurred after the spread of COVID 19, improving the health and indoor well-being of the inhabitants. These guidelines can be used both as suggestions for the housing industry sector and additionally as suggestions for the revision of building regulations. The updates suggested consist of layout reconfiguration and indoor environment quality improvement of dwellings, to enhance also the energy efficiency and environmental sustainability of the built environment. Main strategies to carry out these updates are: public initiatives to promote the reuse and recovery of uninhabited housing units (currently more than 30% of the total, according to Census 2011); expansion of existing residential buildings, both in the size of dwellings and in the common spaces. Where not possible, it could be considered a layout reconfiguration of them. Each building typology before identified has its own peculiarities and for this reason strategies of intervention are grouped by typology as follow:

Detached and semi-detached house. The detached house contains one dwelling unit, surrounded by open space, on all sides, while semi-detached house two dwelling units, divided by a shared central wall, surrounded by open space, on three sides. Their bearing structure and envelope are made by stone or masonry walls. Private surrounding spaces are the strength of these typologies, because they can be transformed in a garden. Extra interior spaces could be added in a vertical extension of the building, maintaining its footprint and avoiding soil consumption.

Row house

The row house contains at least three dwelling unit per each floor, organized in horizontal. The bearing structure is made by reinforced concrete frame or reinforced concrete panel; the envelope is made by perforated brickwork. Critical aspects are the lack of exterior green spaces, few interior common spaces, few cross ventilation for each apartment, small size of the dwellings and their configuration. The intervention of update could consist in the reduction, at each floor, of the number of dwellings to expand common areas and the size of the dwellings. Moreover, in a new external structure, connected to the stair and lift core, could be located common decks, balconies and green spaces. Other floors could be added, to keep the same number of dwellings preceding the intervention.

Apartment building

Apartment building contains multiple dwelling unit, organized in vertical, with shops on ground floor and dwellings above. The bearing structure is made by reinforced concrete frame and envelope by perforated brickwork. Critical aspects are the lack of exterior green spaces and the few cross ventilation for each dwelling. Reconfiguration of dwelling layout (mobile partitions), improvement of natural and

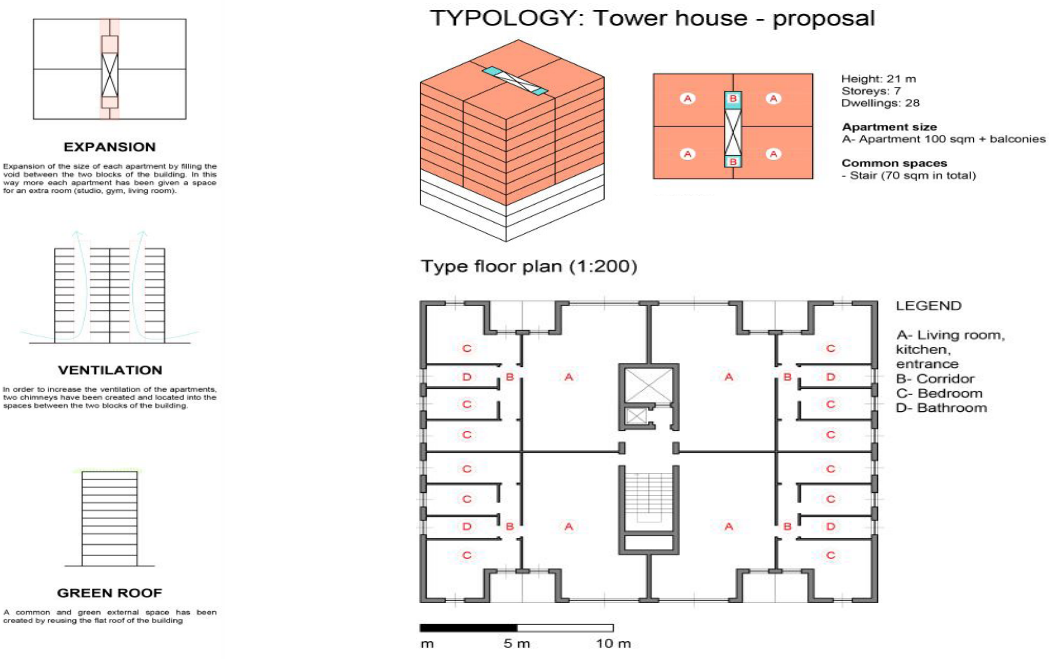

Fig. 2 / Tyopology plan- Tower house, Source: Author

mechanical ventilation of common spaces (Eykelbosh, 2020) and transformation of the roof in a green space could be the main interventions of updating. An effective design of housing spaces in the pandemic scenario must be centered on people's health and comfort needs, also promoting a renovated concept of house like dynamic, safe, and sustainable environment.

Moreover, moving out from the pandemic situation, the upgrading of the residential building stock and the reuse and recovery of uninhabited houses, according to design guidelines here provided, can produce new economic value and growth and have positive social implications in the context of Lezha region.

Notes

*The average is calculated for a surface of 40 sqm, the highest size of the category of dwelling smaller than 40 sqm.

**The average is calculated for a surface of 50 sqm, the average value of size of the category of dwelling between 40 and 60 sqm.

***Even though on the Census 2011 there are data about the building typologies, the number of dwellings has to be calculated starting from some assumptions. For this paper, to estimate it, the assumption proposed in (Szalay, Z., 2015) has been used: detached houses are assumed to include one dwelling; semi-detached house two dwellings; row houses an average of 3.5 dwellings and apartment houses an average of 20.3 dwellings.

results achieved: space sizing, residential best practices, techs adoption, stakeholders: National or local authorities, buildings users, Suggestions for revision of norms

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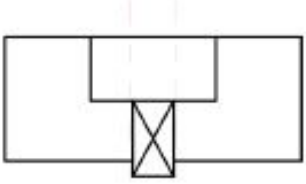
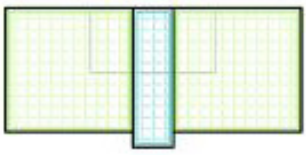


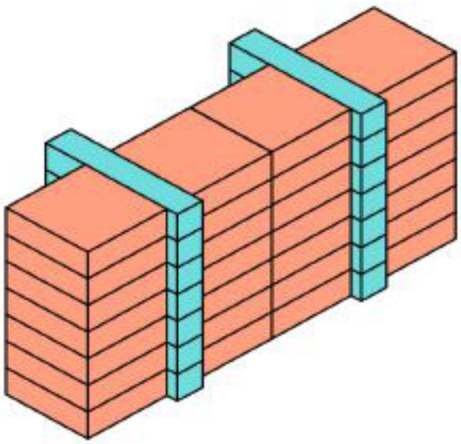
SUBDIVISION

Subdivision of the central apartment into three parts.



FUSION

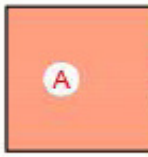
The resultant space from the subdivision is given both to the apartments and to the common central area (stairs)



Height: 21 m
Storeys: 7
Dwellings: 28

Apartment size
A- Apartment 90 sqm + balconies

Common spaces
- Stair (70 sqm in total)
B- Common terrace (280 sqm in total)



Type floor plan (1:200)

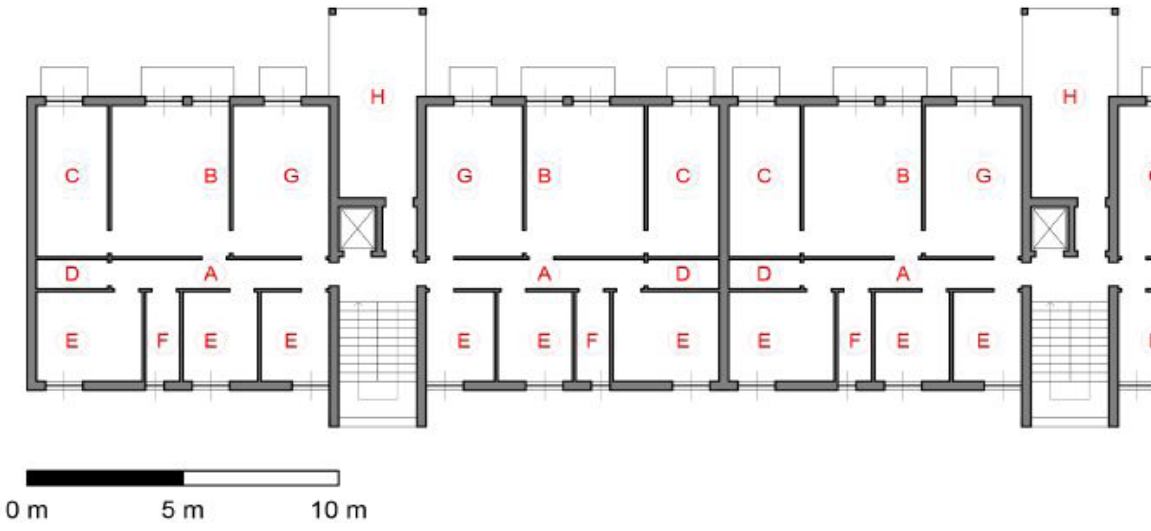
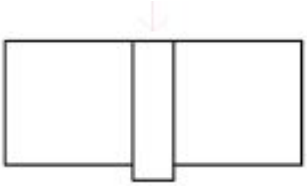
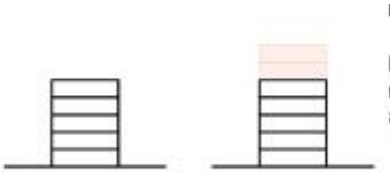


Fig. 3 / Tyopology plan- Linear house, Source: Author



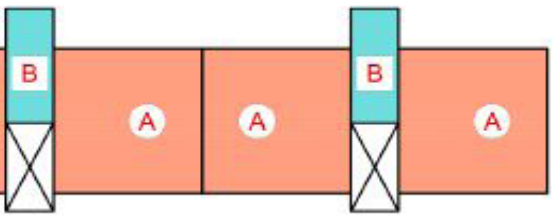
ADDICTION

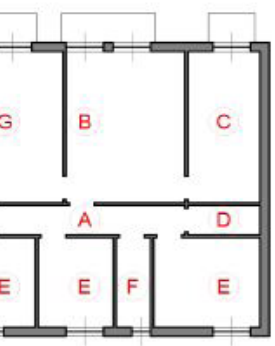
Addiction of an external structure increase the surface of common space at each floor.



Ddensification

In order to maintain the same number of dwellings, two storeys are added.





LEGEND

A- Entrance, corridor
B- Living room
C- Kitchen
D- Storey room
E- Bedroom
F- Bathroom
G- Extra room (studio, gym, living room)
H- External green common space

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Saelland, I., Pajuste, M. and Hansen, E. (2020). Sunlight Qualities in Dwellings: a New Computational Analysis Tool. in LAD Werner and Koering (ed.), Anthropologic: Architecture and Fabrication in the cognitive age: Proceedings of the 38th eCAADe Conference - Volume 1, TU Berlin, Berlin, Germany, 16-18 September 2020. vol. 1, eCAADe, pp. 333-342, eCAADE 2020, Berlin, Germany, 16/09/2020.

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Tab. 1.5.1 Buildings for residential purposes by building characteristics and period of construction
Tab. 1.5.7 Inhabited dwellings by urban and rural area, surface and number of occupants
Tab. 2.1.1 Resident population, buildings for residential purposes and dwellings by municipality commune and type of dwellings

Textile as shelter.

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Introduction- During the visit to the city of Lezha, we got to know an interesting city that carried important cultural and territorial values. In our days this has led to social and economic cities reflected in the new territorial extension. During the acquaintance with the city, some general problems were identified, which are reflected in the facades of the buildings and in the way of using the common areas. Almost the entire area had a chaotic development. My proposal is related to intervention through textile materials. These interventions will help to regenerate the appearance of the city. During the visit to the Lezha town hall, where we had a meeting with the mayor of the city of Lezhe, he introduced us to the city's development plan. Acknowledging that Lezha has had a development in the last 10 years in terms of urban areas, the mayor stopped proposing new constructions in the city because an increase in the number of residents was expected. But during the visit to the city and during the comments that were made in the hall, the presentation of the project opened a debate between the listeners and the presenters of the program. Since a very large number of high-rise buildings still had unused residential houses, it was proposed that perhaps it would be better to create a maintenance plan for the city rather than an increase in unrestricted construction. This part of the conversation became the impetus for the initial ideas on textile facades. This was one of the first thoughts I had, to create a new view of the existing city.

Then, by dividing the work into groups, it was decided to analyze three different points of the city, which had different typologies. At this moment, the analysis of each area began, and, based on the needs, it was designed to place a tent or intervene in the textile facade.

The purpose of these facades or roofs is to unify the areas. Creating a more identifying image of the city! In this study, we will delve into these studies and the development of the city's typologies, in time and space.

Lezha is a developing city that does not have well-organized public centers.

In the documents of the years 1945-1990, where we have the documentation of the transformation of the city based on the regulatory plan of the city, which brought it with common buildings of 4-5 floors. These areas which were spent at that time were also supported by the urban plan of these writings. In the constructions after the 90s, every part of the city was built based on expropriations and individual economic needs, which led to the construction of a city without a well-organized urban plan. This development brought problems for the new city that was being built. Every area of the city has a chaotic appearance as far as the first approach to it is concerned. In certain areas, we have overlapping buildings that belong to different times. For this reason, there was a need for an aesthetic homogenization, focused on the facades, accompanied by functional improvements related to climatic problems. Another connection with the reflection of light and heat in us is the research of a group of students (Elena Garcia-Nevado, Antoine

Fig.1/ Textile Shelter . Source/ The Royal Danish Academy of Fine Arts

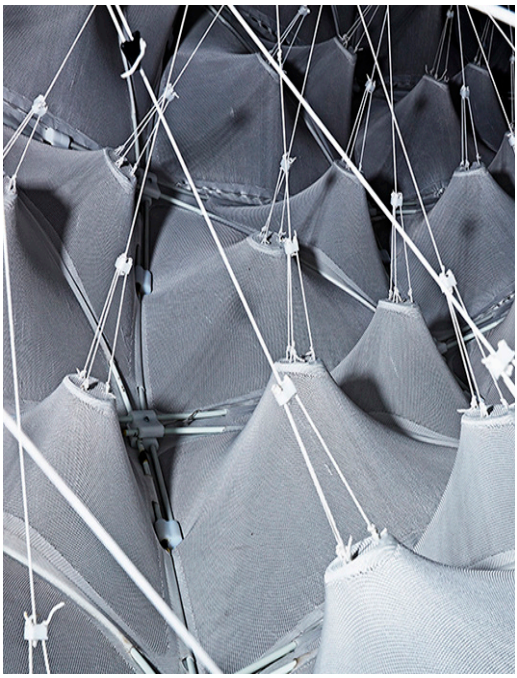

Fig.2/ Textile Shelter . Source/ The Royal Danish Academy of Fine Arts

Bugeat, Eduardo Fernandez, Benoit Beckers) who have conducted a study on a terrain similar to that of the temperature change on the asphalt using textile tents. According to the results, temperatures fall by 10 degrees C with the use of textile tents. During the study of the areas, we have chosen to analyse more closely three areas with certain characteristics in the district of Lezha. First, historical descriptions of the areas were made, in order to see more closely their development over the years. The studies start from the maps of each area, in three specific periods: studies of the maps of the areas they belonged to, the pre-communist period, the study of the maps of the communist period, and the one of the maps after the communist period. After the study of the predetermined territories based on the different typologies that they represented through maps, the areas were selected by looking at the dwellings not only in spatial view but also in height. In this way, the contrasts of transformations from each period until today have been analyzed more clearly. All three of these times analyzed have their own typologies that characterize the area. In the pre-communist period, the buildings were detached vernacular type, with the corresponding courtyard. Which were mainly inhabited by one family. Afterwards, the buildings that were erected respecting the urban plan drawn up were mainly of the block type, inhabited by several families. The plans for the construction of these apartments were accompanied by a reorganization of the infrastructural aspects of the area. While the typical buildings that were built after communism were those of the tower type and these were inhabited by groups of families. Or informal constructions inhabited by one family mainly not with connected yards, building additions, adaptation of volumes, etc. Divisions of areas describing the respective typologies. sources from google maps, ASIG If we look through the construction of maps referring to different periods of time, in the areas studied, the diversity of buildings and their overlapping is very evident. In some cases we have an increase in the number of apartments and in some cases we have superimposition of additions to the existing floor plans. Through the documentation of the photos taken in each of the analyzed areas, various problems have been identified. These problems are related to the general aesthetic image that the city offers. If many cities developed in Albania after the 90s have problems with the overlap of buildings and the occupation of common spaces. In the last decades in architecture, we have an increase in the use of textile facades in many contemporary buildings. The textile facades can be used as covers for the buildings in its conception. They are also a very efficient way to be used as an adaptation on existing buildings. This is to make possible a unification between the informal buildings that have been added to the city. Textile facades with various technological developments have achieved performance capabilities that can compete with many static materials and at the same time have a very good durability performance.

Some positive properties of textile facades

Fig. 3 / Plan of intervation with textile shelter, area 1, Lezhe Author Source

are: low cost, adaptation to different sizes, direct impact on protection from UV radiation, protection of the facade from wind or rain. Studying the city of Lezhe closely, we found that it has a diverse climate where the sun is present for most of the year and is also accompanied by strong winds and torrential rains. According to these descriptions, it is understood that the intervention in the facade is not only an aesthetic and identifying element for the area, but also a functional one because it will help in the best possible performance of the facades. Interventions with textile elements will be designed only for residential houses, not for public buildings.

Study- Area no. 1 is characterized by buildings of the post-communist period which have been erected in the form of multi-storey towers. Near them there are also houses built in this period, but they are of the popular and single-family type. In this area we have the influence of strong natural features such as the river. In this area, the presence of the three typologies mentioned above is noted. Proposal area 1 Since the sides of buildings along the road create a non-uniform structure, not only aesthetically but also from the level of wind movement towards the northwest and southeast. By proposing this textile facade, it can serve not only as an aesthetic balancer, but also as protection from the sun or as protection from strong winds. Factors that characterize the city's climate throughout the year. Façade textile proposes a multitude of dynamic forms for intervention in the facade of the building. The structures created by this company are assembled in the factory and placed on the surface of the building through tensile structures. Different companies working in the field of facades offer these services in different parts of the world. Façade textile international, based on its many years of experience, offers us a variety of functional examples of intervention on existing facades and the construction of facades ("Home") in contemporary buildings. An example is the Medical Office Building in West Hills which was built in 1964 FTI System: Aero S Architect: Michael W. Folonis Architects Manufacturer: Flex Facades. The challenge was to renovate the facade taking into account the budget constraints and choosing an innovative and sustainable design. Used as solar and thermal protection, the bioclimatic facade strongly contributes to improving the energy balance of buildings by improving the transmission of natural and homogeneous light. Both in renovation and in new construction, the bioclimatic facade is an environmentally responsible method. Used as solar and thermal protection, the bioclimatic facade strongly contributes to the improvement of the energy balance of buildings while enhancing the transmission of natural and homogeneous light. In both renovation and new construction, the bioclimatic facade asserts itself as a responsible and environmentally friendly method.

Area no. 2 is an area which lies on the slope of the hill, near the city's castle. This area had a development in the communist period where various infrastructural plans and housing constructions were added.

Fig. 4 / Plan of intervation with textile shelter, area 2, Lezhe. Author Source

Fig. 5 / Plan of intervation with textile shelter, area 3, Lezhe. Author Source

In the years after communism, this area had a construction development where a variety of constructions belonging to the three times can be observed. In addition to the new post-communist constructions (which in the area are characterized as informal constructions with 1- to 2-story type apartments with 1 family function. Also, the Lezha area is characterized by strong winds and sunlight in a period throughout the year. In In it in the same period of time we also have additions to the existing housing, bringing changes in the use of shared urban public spaces in the area and creating an imbalance in the composition of the facades. Another problem of this development is the infrastructural aspect, where overlapping constructions have led to a chaos and in the discharge or passage of sewage and white water. By superimposing the importance of the climatic aspects that characterize the area we can say that there is a need for regeneration strategies. The interventions proposed by me are those through textile materials for architecture, which help in the creation of uniformity of the facades Proposition Area 2 Skenderbeu Since we are in post covid period, they will help the communities by staying in premises outside the residential centers, having a protection through tensioning structures which help to join these facades with each other and create a usable environment in the community, which also has natural ventilation, as it is with open parts on all sides.Area number 3 had a military character. In the post-communist period, this area, as well as areas of the Lezha district, had an increase in informal housing or various silos. In this area, why is it necessary to regenerate the exterior of the housing or the surrounding walls, I would propose a reorganization of the common areas in certain functional, recreational areas. Adaptation of mobile structures in common spaces by creating centers in certain areas. These interventions in temporary materials or in external structures that I propose (mainly with textile materials) I think would have a positive effect on the areas analyzed. Some examples of these interventions: Interventions with textile materials will be proposed on the facade. In addition to the facade, the interventions will also be reflected in the common areas with the intervention of attractive umbrellas to unite the common spaces between the buildings. Also, these umbrella-shaped interventions cover the front of the objects in moments when there is an overlap of objects. Intervening on the facade will help both in neutralizing the winds and protecting from the sun's radiation. At the same time, it will be a covering part of the facades, balancing the interventions that have been made through additions and overlays.

Conclusion- These areas, which have different characteristics, can have a difference from a visual and performance aspect by interfering with the existing facades. The city would create a new image that is contemporary and interactive with its citizens. In this way, not very frequented areas could be turned into attractive areas for its citizens, but also for new residents who can be added to the city over time.

6.1
Dr. Llazar Kumaraku

6
Conclusions

CONCLUSIONS

Rethinking and inventing Territory, Infrastructure and Housing in the case of Post pandemic Region of Lezha (Albania)

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1. Introduction- The region of Lezhe is located in a strategic position of Albania. This region is bordered by the Region of Shkodra in the North, Kukesi in the Northeast, Dibra in the East, Durres in the South and the Adriatic Sea in the West.
The favorable geographical position makes Lezha an important exchange node for the north-south and east-west traffic arteries. This favorable location, where the "blue corridor" is expected to pass and where the "Kombi" road currently passes, makes Lezha a strategic node for the future. In fact, the influence of the geographical position is currently felt in the economic and touristic development of Lezha. It is transforming rapidly by entering the global race of innovative cities.
Beyond this development, which until now has been based on the regulations of various urban plans, this study brings several proposals and strategies that seek to transform Lezha into a resilient city that adapts to the state of post-pandemic cities.
The proposals are divided into three categories that firstly affect Infrastructure and Services, secondly biodiversity and the environment and finally urban development and housing. These proposals are divided into two parts, since it was attempted to contain the comments or suggestions that were received from the meetings with the local actors.

New proposals for planning and settlement models through infrastructure and service interventions (Part I).
Lezha has an immense potential for further development and also to be one of the most crucial cities in the Republic of Albania, due to its strategic geographical position.
Lezha is connected to the national highway Tirana-Shkodra that will be part of the "Blue Corridor". Lezha has also a distance of 15 km from the national highway Durres-Kukes-Morina and is directly connected to the north-south railway. Unfortunately, actually this railway function only in rare cases for the transporting of special goods.
Regarding the distance of the Municipality of Lezha from the customs points, it is located at a distance of 123 km from the customs point of Morina on the border with Kosovo, 48 km and 70 km, on the border with Montenegro. The municipality is located at a distance of 7 km from the Port of Shengjin), 64 km from the Port of Durres, and 45 km from Rinas Airport, only 56 km away from the capital of the country, Tirana and the duration of the trip is less than an hour. The territory of the Municipality is crossed by 4.1 km of national roads and 10.3 km of urban roads. (Lezhë, n.d.).
In this moment Lezha has great potential for increasing the quality of the space in order to improve the lives of the residents and attract tourists. This publication emphasize that the proposed interventions do not aim to turn the Lezha Region into a "Disney" city for tourists, but to improve the quality of the space first for the residents and then to use the tourist capacities as a way to exchange tradition and culture with local communities.
Based on the state of the infrastructure described a paragraph above, the proposals made in this issue affect

the connection between the different settlements of Lezhe with the center of the region represented by the city of Lezhe itself.
In fact, infrastructure interventions are considered a catalyst for improving the well-being of the Lezhe region. These detailed interventions in the article written by Besjana Qaja in chapter 3 (three) of this issue strategically affect the entire region and focus on the growth of agriculture, agritourism and maritime tourism.
In the aforementioned article on the proposed interventions, the thematization of the areas is more important. By thematization is meant what Franco Purini (2022) writes about innovative cities, which to be such must have a theme. According to Purini, the theme is reflected in a specific function which can be based on local tradition and culture. In fact, the Lezhe region is proposed to be based on agriculture (growing vineyards and wine processing), agrotourism and marine tourism. This specialization of areas and their connection through infrastructure - the railway, the blue corridor, various connections and networks of bicycle tracks - build the new image of a city that is oriented beyond the crises of the pandemic and the earthquake.
The intervention in the infrastructure is conceived in the service of increasing the quality of the region's space. First, from this point of view, the first intervention that has been considered is the connection of settlements on the concept of the organic network. Currently, rural settlements are connected by direct main road only to the center of Lezhe. It is proposed to connect them with each other not only within the region but also outside it. In this sense, the revitalization of the railway, which would offer international connections but also the road to Balldren, to Shkoder, the axis Lezhe-Shengjin and the port connection becomes important.
Another important aspect regarding infrastructure is the one addressed by Albina Tocilla in article 3.1. on the intelligent transition of the infrastructure where the use of intelligent itineraries is made in the service of tourism but also of the residents.
The proposal made by Flogerta Krosi on the treatment of construction industry waste solves a series of major problems caused by their non-treatment. Krosi proposes that the waste from the construction industry be used with road substrates in the asphalting process. This proposal reduces the amount of waste in landfills and solves a big problem that affects not only the Lezha region but also all of Albania.
New Proposals for the protection and conservation of biodiversity and the Environment (part I)..

The proposals of this paragraph aim to conserve biodiversity and improve the environmental condition.
Lezha's coastal and lagoon areas are among the first declared National Protected Areas in Albania. Historically acknowledged for their high importance that their natural diversity bears at a regional level, ecosystem services provided contribute to decrease urban pollution before being discharged at Adriatic waters

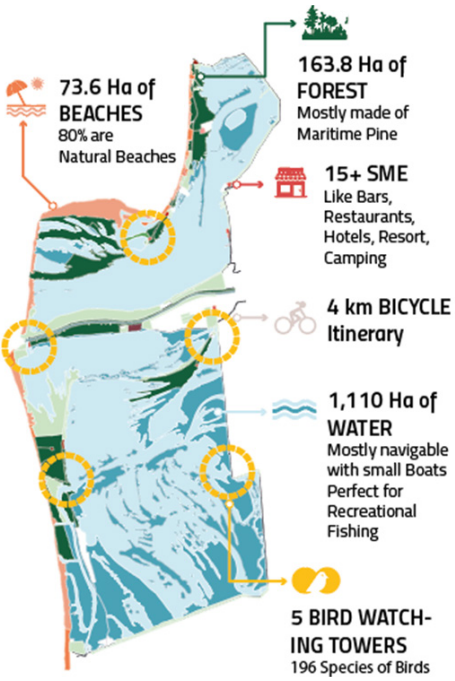


Fig. 1 / Natural assets of Kune -Vain Lagoons in Lezha

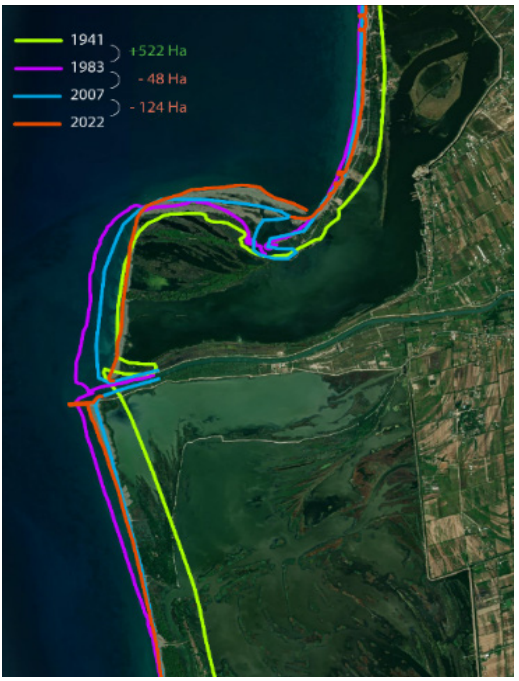


Fig. 2 / Temporal effect of coastal erosion 1941-2022

and even more these areas nest numerous of biodiversity species.

Nevertheless, this area is prone to certain environmental challenges. Currently the area lacks monitoring and maintenance practices that have led to what could be considered a critical point to its accumulative capacity without any irreversible effect on the natural cycles taking place in these protected areas.

From a temporal perspective, we could mention that the extensive interventions during 1950-1975 with land reclamation practices within the lagoon and industrial discharges from mining activities are now combined with the effects from 1995 - 2023 whereas urbanization and partial industrialization of the areas is contributing to the to what could be considered the recent environmental issues affecting these areas:

a. Pollution, particularly from human activities, can have a detrimental impact on Lezha's coast and lagoon. Industrial discharges, sewage, and improper waste disposal can introduce pollutants into the water, affecting the quality and health of the ecosystem.

b. Coastal erosion is a significant issue along Lezha's coast. Factors such as natural processes, climate change, and human interventions can contribute to the erosion of beaches and coastal areas. This can lead to the loss of land, damage to infrastructure, and disruption of the coastal ecosystem.

c. Human development and urbanization resulted in the destruction and fragmentation of natural habitats along the coast and in the lagoon area. The conversion of natural land for tourism infrastructure, residential areas, and agricultural activities can disrupt the delicate balance of the local ecosystem and lead to the loss of biodiversity.

d. Overfishing: Overfishing is a concern in Lezha's coastal waters. Unregulated and unsustainable fishing practices can deplete fish populations and disrupt the natural balance of the marine ecosystem. This can have long-term consequences for both the fish populations and the livelihoods of local fishermen.

e. Invasive Species: The introduction of non-native species can disrupt the native flora and fauna of Lezha's coastal and lagoon areas. Invasive species can outcompete and displace native species, leading to a loss of biodiversity and altering the functioning of the ecosystem.

f. Climate Change: Like many coastal areas worldwide, Lezha's coast and lagoon are vulnerable to the impacts of climate change. Rising sea levels, increased storm intensity, and changes in weather patterns can result in coastal flooding, erosion, and loss of habitat. These changes can have significant consequences for the local ecosystem and communities.

In fact, the proposals go from the proposal of strategies for the blue and green corridors by Rodion Gjoka to the proposals for educating society for climate risks made by Remijon Pronja.

The artistic intervention proposed by Pronja through a "line" that shows how flooded the buildings and the region are in

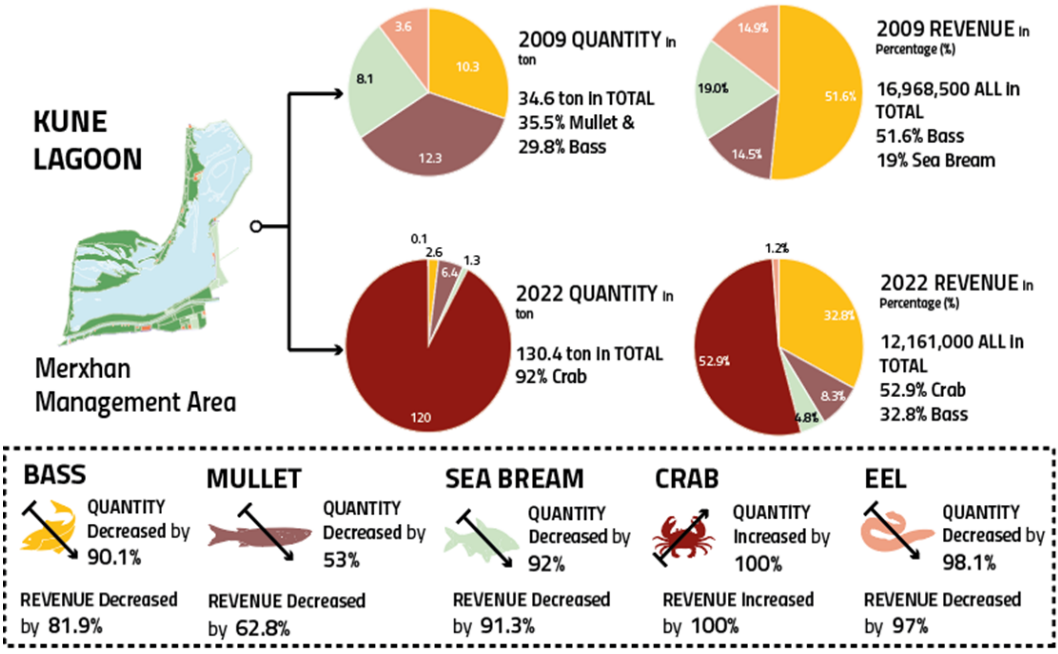


Fig. 3 / Overview of invasive species from the fishing datta

the event that temperatures will increase by 1.5 or two degrees Celsius is a proposal that is as disturbing as it is awareness-raising. In fact, the Albanian artist tries through this intervention to sensitize us on climate change and its effect before the events actually happen. He warns us, like a hermes, about the dangers that threaten us if we do not take the appropriate measures to protect the environment.

Matteo Bisi propozon nderhyrje ne lidhje me Lagunen Kune-Vain per rehabilitimin mjedisor te saj. According to him human activities such as urbanization and agriculture cause the release of nutritious chemical species into waters. In particular compounds based on phosphorus and nitrogen. Their accumulation in the waters of the Kune-Vain lagoon causes the phenomenon of eutrophication (water too rich in nutrients). The richness of nutrients triggers the uncontrolled growth of invasive microorganisms, such as microalgae and bacteria, with consequent decrease of oxygen in the water and impoverishment of the natural aquatic fauna and flora. 4. This leads, on the one hand, to the disappearance of the biodiversity characteristic of the lagoon and its natural ecosystem, with the consequent disappearance of bird and mammal species, and on the other to the proliferation of further invasive species such as the blue crab. To mitigate the seriousness of the situation it would be necessary to carry out periodic monitoring of the trophic state of the waters (i.e. of their content in terms of concentration of Phosphorus and Nitrogen), furthermore it would be useful to plant aquatic reeds of the genus Phragmites which are capable of an efficient filtering activity which would reduce the levels of these chemical species, helping to restore the natural lagoon ecosystem.

In relation to Kune-Vain Antonella Volta thinks that coastal lagoons are transition ecosystems on the border between land and sea characterized by strong environmental fluctuations that influence the physiological and ecological adaptations of living species. The coastal lagoon is a heterogeneous environment that is easily subject to changes of various kinds which cause the loss of wetlands, the increase in coastal erosion and frequent flooding. Human activities are also important stressors that can lead to significant biological changes.

It is known that any alteration of an ecosystem can affect the state of the biological community, reducing its richness and determining the selection of more opportunistic species to the detriment of the more vulnerable ones.

Studying the biodiversity of the population and the biological dynamics of the community in relation to climate change and human influence becomes an important starting point for identifying suitable biological markers, also called "Bioindicators". The identification of specific Bioindicators becomes fundamental for an assessment of the "state of health" of the population and the quality of its habitat and can evaluate the environmental capacity to sustain life.

The continuous monitoring of the bioindicators over time allows to define the interventions that adapt ecosystems

to environmental changes early, strengthening environmental conditions and improving resilience to climate change. Through constant monitoring over time, important parameters can be obtained from the search for suitable Bioindicators, characteristic of that environment. Bioindicators allow early identification of the effects of ecosystem changes on living beings and the environment. The investigation process can be facilitated by the calculation of an Index capable of defining a range of the state of danger to which the environment may be subject, given for example by environmental, climatic and anthropic events. Understanding the development of a lagoon ecosystem early allows you to intervene promptly to prevent living species from being endangered.

New Proposals for innovative housing models that reflect the needs of contemporary society (part I).

Lezha offers a history and an architectural wealth that crosses the boundaries of thousands of years. According to MALAJ (2017, p. 6), the historical traces that talk about Lezha go back to the third century BC through historians such as Polybi or Diodorus. According to Malaj (2017: 10) Lezha may have taken its full form as a city from the end of the 4th century BC through the colony established there by Dionysius of Syracuse.

Lezha, although of ancient origin, has an architectural asset that has been developed mostly in the last 100 years. Beyond the Castle and the Basilica of the Skanderbeg monument, there are few other traces of a city mentioned in history books 23 centuries ago.

In this publication, the interventions proposed for further urban and housing development have touched two important dimensions: the first is that of public space and the second is that of housing.

From the morphological point of view, an exhaustive analysis was made by Rine Zogiani, which considers the interaction between architecture and nature as one of the pillars on which the post-Pandemic city is supported. The author proposes morphological solutions where formal aspects are interwoven with natural aspects. In her essay, Zogiani clearly states that:

" intervene on the zones by different approaches regarding natural elements like wind, orientation, ventilation and insulation conform terrain morphology, environmental characteristics of the zone - based on blocks and plots - to achieve sustainability through natural elements and existing buildings considering the last pandemic better management and overall contribution on efficiency."

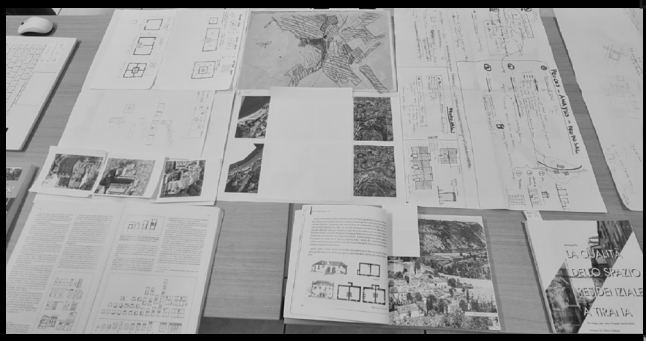
After the analysis and proposals at the morphological level, a detailed analysis at the typological level of the existing apartments divisions and new proposals is done by Nicola Talamonti. In fact, Talamonti has analyzed the typologies of the apartments located in the linear type buildings built during communism and has proposed a series of transformations of the current apartments to adapt to the needs of the modern city.

This study is further detailed by Kumaraku and Istrefaj (2023) where different apartment typologies are proposed for linear buildings. These new apartment typologies respond to the needs for flexible and sustainable spaces over time. They are valid not only for the local context of the Lezha Region, but also at the international level.

This issue closes with an article by Armela Lamaj who studies the appearance of the city of Lezha and seeks to build a visual relationship between textiles and the way the space appears. Here Semper's influences in the conception of architecture and urban form are direct and propose an alternative way of reading space.

All the above proposals emphasize the critical situation of the Lezha Region and through the suggestions for infrastructure, environment and housing seek to build the image of a space that surpasses the crises of these years. A series of other proposals that are closely related to the proposals of this issue can be found below.

WORKSHOP DAY #1



TEAM

BRAINSTORM

#2

SITE VISIT

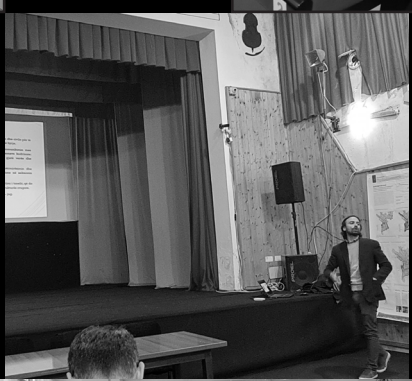
Observation

CONTEXT

FINAL PRESENTATION #1

Stakeholders


Propozime hapësinore për
qytetin post-pandemik
Rasti i Bashkisë Lezhë



Spatial proposals for the post-pandemic city. The case of Lezha.

Issue 2

A project developed in the framework of the
International Doctorate in Architecture and Urban Planning IDAUP
POLIS University, Albania / University of Ferrara, Italy
Co-supported by AKKSHI / NASRI, Albania

Scientific Journal of the Observatory of Mediterranean Basin.

SPATIAL PROPOSALS FOR THE POST PANDEMIC CITY THE CASE OF LEZHA

5
Proposals for innovative housing models that reflect the needs of contemporary society.

6
Results and Discussions.

contents

1.1

Bridging issue 1 &2

Prof. Dr. Besnik Aliaj
Dr. Doc. Sotir Dhamo
POLIS University
Tirana Albania

1
Introduction

Briding Issue 1 and 2
Collaborative post-conflict urban planning tools, to help ensure that reconstruction efforts are people-centered and accessible to all.

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DOI: 10.37199/o41008201

Urban areas and living settlements are frequently nowadays at the center of modern conflicts or crisis. They all face somehow their own unique set of challenges of "post-conflict/crisis" nature - including situations like wars, pandemics, environmental crisis, social unrest, political instability, economic collapse, demographic decay, etc. Aliaj, Toto & Perna conclude that such crisis situation needs to face the "new normal", that becomes soon the "new normal" that pushes for transformative shifts of society, and changes in ideologies or systems. This is a call to think beyond the "stable state" and the "stable normal" *(Schon, Donald).*

Therefore, urban reconstruction processes of post-conflict/crisis settings need to be spatially coherent, but also inclusive to different social groups and vulnerable populations, as well as attentive to cultural, educational and environmental heritage. Under such circumstances only "collaborative/consensual post-conflict urban planning tools" can help ensure that reconstruction efforts are people-centered and accessible to all. The point is not to fall in the trap of being "virtually halted" or emergency-intention driven, or socially excluding situations. Therefore crisis/conflict situations and their effects on the city and society, enforce the rise of new scientific research trends that are based on transdisciplinary approaches.

While it is common knowledge that public community meetings and design charettes allow for community participation in the process of cities planning, the level of stakeholders' involvement remains an issue. This research project of the joint PhD program between Polis University (Albania) and Ferrara University (Italy) supported by AKKSHI Albania, tries to spotlight how such territorial planning process translates in a post-conflict setting, by focusing on the practical tools needed to support engagement of actors in the post-conflict urban reconstruction phase. Municipality of Lezha, Albania, has been selected as a study area because it combines several dimensions of post-conflict/crisis settings, such as: the pandemic, environmental and climate change issues, boom of constructions because of tourism, population loss because of emigration of youngsters, continuous earthquakes, etc. This emphasized the need for community resilience as a pragmatic approach, to generate operative tools not only for the physical dimension, but above all for the social-ecological sub-systems that help quicker recovery ***(Aimar, Fabrizio)***. He underlines the critical role community participation and capacity building has for resilient planning, although that this continuous monitoring of the impact.

Three approaches could be identified under such settings of post-conflict circumstances:

- The area-based approach – which requires spanning multiple sectors in geographically circumscribed areas within cities to ensure integrated urban services and emergency projects.

The objective of the first approach is to

restore access to critical urban services in the selected city, while the conflict/ trauma might be in was ongoing status. This helps to lay the foundation for long-term reconstruction planning in the future. Application of the "area-based multi-sectoral approach" aims at coordinated reconstruction activities in different vital sectors such as water, health, transport, and education. The post-pandemic experience of Lezha Municipality and assistance provided by Co-PLAN Institute shows that in order to be successful in the challenging environment of a conflict-torn country or city, the planning logic to be applied must be a "flexible implementation approach" that relies heavily on local institutions and citizen engagement thus benefiting from their trust, capacity and expertise.

▪ The healing framework – which places administrative-cultural-environmental aspects at the core of reconstruction and recovery processes by embedding all above-mentioned local heritage and creativity, at the foundation and intersection of the place-based and people-centered policies.

The second approach is useful specially to explain how restoration of historic sites, buildings and markets promote urban recovery and cohesion between various factions of society. Cultural, educational, environmental and administrative heritage could be common denominators to bring together warring groups. Recently developed "healing framework programs" by EU, UNDP, UNESCO, and Albanian authorities, etc., in post-earthquake, post flooding or post-pandemic situations Albania (including Lezha Municipality), places culture, environment, education, and local capacities at the core of reconstruction and recovery processes by embedding human resources, cultural heritage and environmental creativity at the foundation and intersection of "place-based" and "people-centered" policies. One must underline the fat that while "place-based strategies" prioritize the reconstruction of physical assets, "people-centered strategies" strengthen community ownership and social inclusion, improve livability of the built environment, and accelerate the socio-economic recovery of cities.

Albanian government, EU and other bilateral donors have been jointly supporting ambitious reconstruction projects after the earthquakes of September and November 2019 where the cultural-educational heritage have been combined with urban and housing redevelopment projects, focused on the regeneration of historic cities. With their densely populated neighborhoods, cities of Durres, Tirana, Lezha, etc, are dotted with historic, including some of the world-class heritage assets. Parts of these cities have been successfully regenerated and rehabilitated, aiming at building more inclusive communities. The project created a space for residents to live and enjoy, linking public space, schools, cultural heritage, and private business. The specific case of Durres-Tirana region is an example of how the revitalization of educational and historic assets can be leveraged to provide larger societal benefits, fully exploring the potential of educational and cultural heritage as a force for social inclusion and cohesion, and economic development in local communities.

▪ The urban recovery framework - which encompasses strengthening institutional arrangements, enabling the policy environment, financing urban reconstruction, and improving implementation arrangements

This research project reflected on the drivers of urban conflict such as unmanaged population movement and decay or growth, consequences of climate change in flooding and wetland areas, or increase in poverty and overall fragility of society, etc. It provided an overview of the "urban recovery framework" that supports resilient urban recovery at scale, and the renewal of the social contract beyond mere physical improvements. Such framework starts with the establishment of a "common urban information baseline by local administration, with regard damages and needs during and after the crisis/conflict.

Building on this baseline, a common vision and respective strategic objectives, might help to guide the development of urban recovery plans from the national, regional or municipal scale to the household level. The "framework logic" calls for these plans to be complemented by an enabling institutional structure and a sustainable financing strategy. Remote sensing-based methods could be employed to assess damages, reconstruction and recovery needs. High-resolution satellite images can be used to get a detailed picture of the dynamic situation on the ground. The data are not only able to support the mapping and evaluation of damaged infrastructure, but also give insights into the current conflicting dynamics by showing the

establishment of frontlines of the problem. Such data and analyses can support future reconstruction planning as well.

This workshop / project of the joint international PhD Program of Polis University, Tirana, and Ferrara University, Italy deals with the theme of post-pandemic / post-crisis city looking into the transformations; the intertwine of health and wellbeing with these transformations and city-making in post-crisis period, etc. It focuses on the role of architects and city planners in such situation and in promoting potential new models of resilient life. Some of the findings are:

Besjana Qaja, considers the disbalance created between urban and rural population of Lezha Municipality, because of aggressive urbanization and emigration rates. She considers important the investments on access infrastructure, as an instrument to raise quality of life and services for the rural areas, therefore stimulating the increase of economic (agrotourism) activities there, in order to have better chances for the potential return of local population. In addition, well-accessed and well-served rural areas can be used as a buffer/escape area in time of crisis where people return to nature and resources, and have a better and healthier life in cases like pandemics. This can also complement better urban and touristic areas to reduce pressures on them in the so called 'normal days' and distribute smarter population and activities all over the territory.

Emel Peterci illustrates the use of "digital survey modeling" as a critical process not only for knowledge but also documentation purposes. Furthermore, she applies it in the situation of the historic assets of Lezha Municipality.

Meantime, ***Ilda Rusi*** focuses on the evaluation of the current periphery building environment, and projects certain vision for the future. Her conclusions emphasize that database must consider: structural typologies, construction dates and potential upgrades needed. This helps to undertake pre-earthquake preventive interventions and not post-factum emergency actions. For that purpose, municipality must identify

Filippo Petrochi, calls for a balanced way of local and tourism development. The potential is there, but the main beneficiaries must be the local population. He underlines the need for adopting a human centered design moving from the existing car centered system toward a multi modal mobility system. The purpose is to rethink entire mobility system by making it more inclusive and accessible to all ages and economic levels, and increase cohort of users.

Albina Tocilla, focuses on the main access road between Lezha (main urban and administrative center) and Shengjin (main touristic attraction) which suffers heavy traffic especially on the summer season, She recommend to work in two direction: i) providing alternative access road; ii) and using internet of things technology (speed sensors,

Flogerta Krosi, deals with construction and demolition (C&D) waste in Lezha region. Because of tourism and housing growth, construction trends are also growing in Lezha, Shengjin and other settlements. It creates serious problems with C&D waste, that by the end of decade is foreseen to reach a volume of 25,000 tons per year. This is a threat for the transformation of agricultural land into landfills of non-degradable waste materials such as: soil, concrete, bricks, glass wood, plasterboard, asbestos, metal and plastics, etc. The author recommends the use of alternative management routes, as an instrument to encourage both environmental protection and cost savings. This in return increases the quality of life both for the local population and the increasing number of tourists. In addition, the authorities must establish a management plan for solid waste dealing with the pressing urgent situations that must be dealt with short and middle-term instruments, while also considering a stable long-term plan for dealing S&D waste.

Rodion Gjoka, elaborates the idea of energy and ecological corridors. He believes that climate resilience in Lezha could be established reasonably by investing in the 'blue" and "green" corridors, via biodiversity preservation and joint management. Ecological networks, including hydrology, green areas, geography, climatic conditions, energy metabolism, transport infrastructure and industry interactions, - according to the author, - can coexists in harmony if they are extracted form of the "ideology of approaching them" as separate networks with a linear logic. Indeed, between them there is no contradiction, but only profound opposition. Gjoka proposes to establish relations between

the natural (blue & green) networks of Lezha-Shengjin axis, with the ecological and biodiversity corridor of Kune-Vain-Tale preserved areas. This will be very useful in cases of flooding, wildfires, and other extreme events in the area. It will pose a new systemic approach towards problems and issues of high relevance at local, regional and national scale.

Antonella Volta, elaborates on lagoon areas as a transitional ecosystem between land and sea, with strong environmental fluctuations, which affect the psychological and ecological adaptations of the living beings. It is essential for Lezha local administration to consider that the environmental quality of the lagoon ecosystem depends on the balance between chemical-physical components and biological processes that define the complexity of the trophic chain. All these factors are strongly influenced by human activities that causes lagoon eutrophication. This is a serious threat to Lezha region that can harm one of the most important local natural assets. This encourages loss of lagoon surface, coastal erosion, increase of flooding phenomena, and significant biological changes in waters. Author recommends a study to evaluate the structure and time-space dynamics of the biological communities of the area, thus to asses ecosystems' quality, and evaluate healthiness level to the potential environmental remediation. The identification of specific bioindicators becomes fundamental for the assessment of "health status" living organism, their habitat, as well as communities living there.

Mateo Bisi, goes further in this direction. He elaborates the relation between lagoon and rivers under the light of their threats and fluxes of contamination (especially by P-phosphorus, and N-nitrogen) related to mining, industry, and urban waste, as a risk for anthropization, proliferation of invasive species, and damage of biodiversity. He strongly recommends systematic monitoring of the state of waters in general, and specifically in the lagoon as a natural filter between land and sea. In addition, he urges: reactivation of abandoned agricultural land; cultivation of vegetations that clean such pollution; filtering changes of economic activities, mining and industry; and investing on sewerage infrastructure and treatment plants.

Rine Zogiani, elaborates a scenario of proactive use of the environmental architecture as a sustainable solution against crisis like the (post-)pandemic city. She focused on three situations: two in urban areas and one in coastal; than using the findings to recommend a holistic and systemic approach. One of the typical problems of daily life during the pandemic (that was easily identified by all), it was air pollution/cleanness. Author proposes smart and sustainable architecture and urban design solutions such as: better use of the angle orientation of buildings; considering the height of the building; use of green corridors when possible; natural ventilation and energy efficiency; use of wind energy; considering terrain morphology; focusing on urban blocks rather than single buildings, etc. Though the use of sustainable solutions, authorities can also successfully address social and economic differences and inequalities.

Armela Lamaj, considers the use of textile material as an instrument for improving the aesthetic and functional aspects of buildings, housing blocks and public spaces, but also to impact positively the image of the city, with flexible and low-cost materials. In addition, she empathizes the fact that textile combined with technologies can also improve the (energy) performance of buildings and public spaces, such as in the historical areas, main squares, and paths exposed to heavy sun or rains. The material helps also to reduce the weight of building form structural-seismic perspective, while lower the costs in case of adaptation. According to tests undertaken the use of such material and technology can absorb 10-degree Celsius difference by reducing or maintaining temperatures as buffer space, depending on the season.

2
Interdisciplinary exchanges

Building Resilience for Local Governments in Albania
Legal and Institutional Challenges

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Abstract- *Uncertainty from natural hazards and disaster risks is high in Albania. Located in the western part of the Balkan, Albania has faced over the years several disaster events and the future, especially in the light of climate change, does not hold any positive news. Multiple hazards are present over the territory and extend beyond the administrative boundaries, revealing the need for an integrated local - to national – to regional approach to resilience building, as a response to uncertainties. The following paper analyses the role and challenges of the local governments, from and institutional perspective, for enabling local resilience. Local resilience has social, institutional, governance, economic, ecological and territorial dimensions. This paper addresses local ecological and territorial resilience.*

1. Uncertainties from natural hazards and disaster risk in Albania

In this age of uncertainties increasing worldwide and becoming particularly prevalent in urban areas, Albania makes no exception. As a Western Balkan country, Albania is highly prone to natural hazards and to the expected impacts of climate change (Gencer, 2014). The exposure to hazards is significant over the whole territory, but it is extremely higher in the western lowlands situated along the coast. This area, though representing only 11.78% of the Albania's territory, has the greater concentration of people (36.3%) (Bruci et al. 2016) and assets, therefore amplifying the impact of disasters and of the changing climate. Economic and social impacts are numerous. For instance, according GFDRR (2017), based on estimates from 2015, the GDP and population were affected at a level of 83% and 79% respectively by 250-year earthquake, and at a level of 6% and 7% respectively by 100-year flood. Furthermore, the vulnerability of those exposed is also very diverse and has a capillary distribution into the society groups and sectors, and across the territory, which can be witnessed through various reports on risk and vulnerability mapping, as well as from the latest post-disaster assessment report of the Government of Albania (Government of Albania, 2020a, 2020b; UNDP & Red Cross Albania, 2004; Toto and Massabò, 2014; Gencer, 2014).

Albania has a small area size with a large diversity of forest and water ecosystems, including hydrogeological formations, extending across borders in the region (Gencer, 2014). Therefore, disaster risks constitute a local-to-national-to-regional issue.

To start with, being located within the Mediterranean-Trans-Asiatic seismic belt, in the Balkan Peninsula which "falls within the zone of collision between three large tectonic plates – Eurasian, African and Arabian" (Milev and Vassileva, 2007, p. 57), Albania has a frequent seismic activity. The southern Albania is affected by southwest motions relative to Apulia microplate (along the coast), while other motions are visible internally, all leading to several small and medium size earthquakes and few large events (Jouanne et al. 2012). The latest of these large events was recorded in November 26th, 2019, with a magnitude 6.3 in the Richter scale, causing major damages in the Durrës area, in Kurbin, Lezhë and Tiranë, with over 900

people suffering injuries and 51 victims. In overall 11 municipalities were affected (Government of Albania, 2020a). This was by far one of the most tragic earthquakes in the country and it "triggered a foretold crisis regarding safety, quality of planning and construction, and administration of territories in Albania, which was manifested on all governance levels and dimensions" (Toto, 2019b, p.25).

Furthermore, both, the lowland and the hinterland are susceptible to effects of climate change triggered by natural and anthropogenic perturbations. Temperatures are experiencing an increasing trend for both maximum and minimum values, with all potential scenarios revealing a decrease in annual precipitation by up to -8.5% by 2050, and by up to -18.1% by 2100 (1990 as the baseline year), and draughts frequency increasing (Bruci et al. 2016). Likewise, an intensification of short and long events of heavy precipitation is expected, leading to floods and negative economic consequences. The Adriatic Sea level has risen by about 15 cm over the last century altering the shoreline and consuming land (ibid.). While floods become more and more frequent and uneven, water resources diminish (ibid.). Response to the increasing demand for water consumption for urban uses, irrigation, and electricity production, may be significantly compromised, requiring not only better management within sectors, but also new alternatives to satisfy needs.

In addition, deforestation – forest fires and exploitation of wood as a primary material for various industries, has led to floods in the western lowland, and erosion and landslides everywhere in the country, besides contributing to the world's increasing CO2 levels. Paucity of official data on forests and deforestation hinders the potential calculations on related risks. However, based on Corine maps, the total forest area (broad-leaved, coniferous, and mixed) has shrunk by 9% from 2000 to 2018, while according to INSTAT figures (source of data Ministry of Environment) the total volume of woods has diminished by 32% from 2006 to 2018. These data should be interpreted with caution, but at a first sight they suggest that their major change might be related to forest density reduction and exploitation of mature natural forests.Floods show an increasing trend (Toto and Massabò, 2014), and are caused by a number of other factors too, such as dense housing construction on the low plain agricultural area (often over the drainage and irrigation system); lack of maintenance and investments on critical infrastructures for stormwater, both in rural and urban areas; the changing water regime in rivers and sea level, raising due to warming climate; the continuous advancement of certain coastal geological faults; and river beds alteration due to industrial activities. As a result, an average of 7,000 ha of agricultural land flooded per year (maximum 40,000 ha) is reported by DesInventar1 Albania for the period 1985-2014. Landslides, on the other hand, happen due to unplanned urbanisation and use of land and exploitation of mineral resources (mines and river banks excavation).

According to DesInventar Albania

(completed in 2014), more than 4,000 disaster events are recorded in Albania from 1851 to 2013, where the majority (33%) are meteorological events, followed by climatological (22%), hydrological (21%) and landslides (14%). The remaining 10% of the events were geophysical, biological and technological (Toto and Massabò, 2014, p. 35). However, geophysical disasters have caused the highest mortality rate, accounting for more than 50% of total life loss, followed by hydrological events with 18% (ibid., p.42). According to Toto and Massabò (2014), water-related events have been more common during Autumn. Yet, residents of the various areas experiencing floods report that after 2014 it is difficult for them to predict when an event might occur, as their incidence is unevenly distributed along the rainy seasons.2. Institutions, policy-makers, and stakeholders in Albania are becoming increasingly aware of the altered incidence and presence of hazards and of increased risks from disasters. Yet, resilience planning and response are weak and this might be attributable to inadequate institutional capacities and financial resources, insufficient knowledge of the stakeholders on hazards, exposure, risks and disasters, as well as to the presence of significant socio-ecological and spatial vulnerabilities (UNDP & Red Cross Albania, 2004; Gencer, 2014; Toto and Massabò, 2014; Duro, 2015). The step-by-step response of the state, non-state and voluntary institutions after the November 26th, 2019, revealed a low level of preparedness, particularly at the local government level. The concept of local/urban resilience itself remains weakly understood by the stakeholders (ibid.), mainly due to being a complex, multidisciplinary and crosscutting phenomenon, objective and approach (Toto, 2019a) all at once. Though widely discussed in scientific and professional domains, and generally agreed as a dominant-to-be tactic in governance and development (ibid.), on a local level, resilience needs contextualisation and accurate interpretation. It may be defined as the capability (both competence and potential) of the system to withstand crisis and to adapt quickly afterwards reaching a new robust equilibrium. For the purposes of this policy brief, resilience at the local level takes a socio-ecological and territorial perspective, hence being discussed in the frame of natural hazards (human perturbances on ecosystems included) and related disaster risks.

The following analysis will focus on the institutional and legal framework for enabling resilience at the local level. Albania is part of international commitments that promote resilience and adaptation, but implementation needs further improvement and local governments are far less engaged in this regard, having mostly a reactive position. The following analysis will reveal factors that stand behind, such as human and financial capacities, and will conclude with recommendations for local governments. The latter are closer to citizens, territories and natural resources and phenomena, and should therefore be capacitated and enabled to plan and respond proactively for building local resilience.

2. Challenges of the policy framework for local resilience

According to Morchain (2012), disaster response and resilience planning at local level can be strengthened by addressing a number of framework aspects, whose absence could be otherwise defined as reason for poor or inactive performance:

- Completion of specific legislation (emergencies and disaster risk reduction) and integration

of policies and instruments with those deriving from sectorial legislation, such as climate change, environment protection, spatial planning, building codes, water resources, energy, transportation, etc.

- Institutional coordination and multi-level governance, with local government at the core of decision-making and effective participatory processes with a broad range of stakeholders as the approach.
- Provision of access to adequate funding, including technical resources to respond to the growing and diversifying needs in cities and rural areas.
- Enhancement of stakeholders' knowledge and exchange of know-how among actors (science, policy, community) and application of adaptation planning and measures that build on local knowledge potentials.

These four aspects, which represent a summarised version of the ten essentials proposed by United Nations Office for Disaster Risk Reduction for making cities resilient, are used as a framework for this policy analysis on local resilience in Albania.

2.1 Legislation and instruments

The first of the ten essentials of UNDRR for making cities disaster resilient, is about ensuring strong leadership, coordination and clear responsibilities, which are based on well-defined policies and strategies

(Gencer, 2017). A clear legal framework is necessary, among others, for local governments to take leadership and self-organise for [disaster] local resilience well in advance, and in a continuous way.

1. In Albania, the legal framework addressing [local] resilience is composed of specific and sectorial legislation. There is also a sanction in the Constitution of Albania (articles 170, 173 and 174), which relates to the declaring of state of emergency by the national government under extraordinary circumstances, for a limited period, due to disaster events and other major risks. This prerogative offers a response mechanism for the protection of the society. However, it may undermine the concept of resilience, which in itself includes also protection, because (though for a very short period of time) it limits democracy and human liberties. The latter are both considered crucial to a system's resilience, which builds among others on cooperation, open network governance, and flexibility of actions.
Currently, the concept of [local] resilience is not articulated by the government on a policy level, though this might change once the National Strategy on Civil Protection and Disaster Risk Reduction (DRR) (still a draft) will be approved (Government of Albania, 2020b). The existing sectorial laws and bylaws address aspects of local resilience, without pertaining to a common government platform or program, and without following any clearly set objective on resilience. With the exception of the recent law no.45/2019 "On civil protection" and the laws that relate to the transposition of Chapter 27 of the acquis communautaire, the rest of the legislation has mostly a 'par hasard' connection to the concept/objective of local resilience, as it will be analysed below. This leads to a fragmented and ad-hoc approach to resilience in overall, while at the local government level, this connection is even weaker due to legal and institutional conditions that hamper full and effective decentralisation.

2. The legislation analysis refers to key sectors that are either defined as decentralised functions by the law no. 139/2015 "On local self-governance", or affect the land use and management of the territory at the local level3. The need to address resilience is inherently built in local governance, and though not literally outlined in the local self-governance law, the obligation for it derives from several articles. An interpretation of the law suggests for the existence of the horizontal (or territorial) approach to governance – that which guaranties services for the community, while simultaneously ensuring the sustainability of resources. Ii is in this frame that local governments should manage infrastructures and utilities, social care and quality of life, economic development, spatial planning and land management, agriculture and rural development, forest governance, urban environmental management, and civil protection (articles 23-29 of the law). While civil protection is specifically indicated as a decentralised function (to the degree defined in the sectorial legislation), the entirety of local functions and the territorial approach to governance reveal that the legal premises for resilience thinking and action are already there. Yet, this does not satisfy the need for specific legal provisions on resilience, and neither justifies the absence of a nationally undertaken local program/platform on resilience or the poor local capacities.

3. The current law on civil protection embraces the concept of resilience. This law follows its predecessor, law no. 8756/2001, "On civil emergencies", as amended and in force until July 2019. A major leap of improvement in the new law was the widening of the scope of work, from emergencies to protection. This bears not only new responsibilities for the affected stakeholders, but also a conceptual revision, emphasising prevention and preparedness and the integral approach to risk reduction and protection of habitat. The law is partially aligned with a number of EC directives that address critical infrastructures, floods, dangerous substances, electronic communication, and the EU mechanism of civil protection. This alignment also helps in introducing the integral approach, and brings elements that were not present in the previous law (see for instance Duro (2015) analysis on critical infrastructures in the civil emergencies law).
The law no. 45/2019 provides a clear definition of resilience as the system's capacity to resist, absorb, accommodate, adapt, transform, and recover quickly from disaster, among others through protection and restauration means (article 3, author's translation). The law states also the need for establishing an integrated information system that serves to both planning and preparation, on one side, and to coping with crisis and recovery after crisis, on the other. This information, together with early warning systems, should feed the

risk assessment process in particular, and should be updated continuously and timely for stakeholders to undertake risk simulations. The information would also allow for the implementation of the subsidiarity principle (article 7), according to which planning and response should be delivered from the bottom to the top, increasing in level of cooperation the more complex the disaster risk becomes and the lower are the local capacities to handle it.
In terms of institutions and instruments, the law no. 45/2019 defines proportionally equal responsibilities for the national, regional and local institutions. There is a principle of hierarchy and harmonisation among the institutions and planning instruments. Hence, the ministry responsible for civil protection (through the relevant agency), the Prefectures and Municipalities should all undertake risk assessments and prepare risk reduction strategies and plans for civil emergencies for their respective territories. There should be vertical and horizontal alignment among the instruments. So far, as the law does not contain any bylaws as yet, it is unclear how this alignment will happen procedurally. The Prefect of Qark and the National Agency for Civil Protection should verify the local risk assessments and the civil emergencies plans, but it is not clear whether they have a say in terms of approval. Furthermore, the law defines a period of two years from its entry in force for the preparation of local risk assessments and three years for the local risk reduction strategies and emergency plans. These periods are sufficient for municipalities to carry out this assignment in relatively comfortable conditions (assuming access to finances and technical support will be made available) and with a good quality. However, the law is not coercing enough for municipalities to take action in time, while the risks from climate change are more and more evident and seismic events and forest fires are both, regularly common and unpredictable. With a national plan on civil emergencies dating as of 2004, Albania and the 61 municipalities are in a critical need for instruments that lay out the path towards implementation of resilience as an objective.

4. The sectorial legislation encompasses resilience (notion, objective, approach) in various degrees. More prominently, a resilience thinking is present in the environmental legislation, particularly in the horizontal one, which, according to the analysis of SANE4 in 2019 and Co- PLAN in 2020 for Chapter 27, has the highest level of transposition (78.6%) with the acquis. The framework law no. 10431/2011, "On environmental protection", as amended, is built on two major principles, that of protection of ecosystems and natural resources and prevention. Through these principles, this law makes direct connection to the specific laws and practice on environmental strategic assessment and environmental impact assessment, and therefore also to territorial planning, particularly at local level. Furthermore, this framework law conveys prevention and reduction principles into the legislation on solid waste (low no. 10463/2011, "On integrated waste management", as amended) and establishes the premises for the regular monitoring of environment. Regarding climate change, this law defines requirements for reduction of greenhouse gases, carbon sequestration and enforcement of renewable energy sources, and energy efficiency measures.

5. An extremely important sector related to local resilience is climate change. The climate change legislation, according to SANE and Co-PLAN has currently the lowest level of transposition with the acquis (12.2%) out of 71 legal acts considered in the screening process of Chapter 27. This is mostly due to the fact that the law on climate change is still pending approval. As a result, bylaws, the strategy on climate change, and the national plans (on mitigation of greenhouse gases and adaptation towards climate change) are yet to be adopted. The current draft-law places an obvious emphasis on greenhouse gases, and it is (for now) the only document that addresses 'adaptation strategies and measures' in a direct way and as a direct obligation for all institutions, including local governments. This draft-law defines (among others):

- integration of climate change in all of the existing, or future sectorial and territorial strategies and plans, such as in the field of energy, water resources, protected areas, transport, solid waste, water management infrastructures, forests, agriculture, and territorial planning;
- municipalities to establish climate and adaptation related databases for their own use and for feeding data to national institutions;
- national and local institutions to carry out risk assessments related to climate change exposure and vulnerabilities and encompassing the results in planning

documents and concrete measures, backed-up by financial means and implementation plans.

6. The law no. 8385/2005, "On forests and forestry services", as amended, makes reference to sustainable development and has incorporated the concept of ecosystem services, which is vital to ensuring resilience. One of the ten UNDRR essentials for achieving local resilience is the ability to identify, protect and monitor natural ecosystems, to enhance the protective functions they offer in the frame of risk reduction (no. 5; see Gencer, 2017). Forests have a fundamentally protective role against the effects of climate change, such as floods and water scarcity, while also contribute to CO2 reduction in the atmosphere through their sink function. Yet, forests remain largely unprotected or poorly managed in Albania, still prone to illegal logging and trade, regardless of the respective moratorium approved by the Parliament in 2016. The forestry legislation, with a level of transposition of the acquis up to 36% (as defined by SANE in 2019) promotes an integrated management approach. It does so by trying to link the use of forests as a production economy, land use, governance, and landscape management among them. This connection appears in its objective as well. Yet, the law does not make a reference to resilience and adaptation planning. Municipalities do not, furthermore, encompass these concepts in their local forest management plans (very limited in number to date, due to low financial resources), which remain largely focused on the forest economy, rather than on the protective management of the ecosystem. However, the currently approved "Policy Document for Forests in Albania" (Decision of Council of Ministers no. 814/2018) makes an important step forward by: endorsing the principles of sustainability and integration and operationalising them into actions and measures; making equal reference to both, the socio-ecological and economical values of forests; recognising and sanctioning the connection of local communities to forests, and therefore their undeniable role in governing forests through collective action; clarifying the role of local governments in forest management and establishment of relevant databases; and proposing a forest protection policy that should be in line with that of civil protection and emergencies, paying particular attention to forest recovery.

7. Energy is not a distinctive sector that local governments deal with. However, the exploitation of energy resources has a direct impact on territorial governance at local level, while energy efficiency measures affect the land management process, which is a local function. For instance, the law no. 43/2015 "On the sector of electrical energy" has no provisions that relate to local governments; yet it considers water resources as renewable. In the view of climate change effects, hydropower plants do not guarantee resilience and their construction leads to divergences with the local territorial planning decisions to protect water resources. Discrepancies exist also with the law no. 111/2012, "On integrated management of water resources", as amended, which builds on the principles of prevention, protection, and coordination of decisions regarding water sources, as well as coerces municipalities to protect water resources from any form of construction. Similarly, the law no. 7/2010, "On the promotion of use of energy from renewable resources", includes water sources in the renewables, creating further premises for the unsustainable exploitation of water resources for energy production. This is reinforced by the annually revised national action plans on renewable energy sources that continue emphasising water as the ultimate renewable energy source in Albania and very climate friendly, because it contributes to CO2 emissions reduction. This policy decision does not support ecological resilience, which is a key element of adaptation-based energy production. In addition, municipalities have a very marginalised role and lack the necessary competences and mechanisms to promote renewable energy resources.

8. Resilience is poorly addressed in the transportation sector too. The rode code and the law no. 8380/1998 "On road transportation" do not make any specification that could explicitly relate to resilience and adaptation. There are few indications (for instance article 23 of the law no.8380 and few articles in the code) on emergency measures, but with no connection to prevention and preparedness as necessary steps to address crisis and evacuation. Yet, by obliging municipalities to prepare mobility plans and organize city space for improving mobility and dealing with emergencies, the legislation provides sufficient space (though not clear orientation) for local governments to build resilience in the transportation and mobility sector. Albania has adopted the National Transport Strategy and Action

Plan in 2016 and the National Plan for Air Quality Management in 2019. These plans contain measures for reducing public transportation emissions in urban areas and mitigate related air pollution, requesting municipalities to adopt Local Air Quality Management Plans and Local Sustainable Transport Plans (Gjoka and Delli, 2019). Currently only the Municipality of Shkodra, has initiated a process of preparing both plans, while Tirana is developing a Sustainable Urban Mobility Plan. However, the current initiatives do not address the aspect of decarbonization of the public transportation sector (ibid.), which is highly desirable for achieving local resilience.

9. Through the territorial-administrative and local government decentralisation reforms of 2015, municipalities have received significant responsibilities in the field of agriculture and rural development. To start with, they are responsible on implementing provisions of the law no. 9244/2004, "On the protection of agricultural land", as amended, whereby they should guarantee a balance between land ownership rights, local needs for agricultural activities, and protection of soil from construction and any type of pollution discharge. Such a responsibility is further reinforced by the bylaws that specify building regulations and procedures on agricultural land, under the law on territorial planning. Furthermore, the law no. 9817/2007 "On agriculture and rural development" introduces the concept of sustainable agriculture connecting it to the protection of natural resources. Though not explicitly, both laws provide good grounds for municipalities to engage in achieving local resilience. On the other hand, a stronger adaptation perspective is present in the law no. 24/2017, "On the administration of irrigation and drainage", where besides the efficient management of water resources for irrigation, floods and erosion are significantly addressed, as a means for protecting environment and improving territorial resilience.

10. Finally, [local] resilience constitutes an important dimension and objective in the territorial planning domain, both in legislation and in planning instruments. The law no. 107/2014 "On territorial planning and development", as amended, defines sustainable development of the territories as its main objective, based on the protection of natural resources, environment and landscape, as well as on the balance of sectors and stakeholders' interests. The law does not explicitly employ 'local resilience' as terminology, but it refers often to measures and interventions such as regeneration, protection, and adaptation. The bylaws, which define the content and methodology of territorial planning instruments and of the creation of public space, employ more language in the direction of climate change and adaptation, protection of natural resources. They contain also legal and financial means for creating public space, the latter being crucial in view of preparedness for and management of disaster events. Most importantly, the legislation obliges municipalities, as well as national institutions, to cooperate horizontally for making decisions on the use of natural resource and on alteration of landscape ecologies. Furthermore, the National General Territorial Plan addresses resilience and climate change adaptation in very explicit terms. To start with, it emphasises the territory as one common and vital resource and it encompasses sustainability, resilience and adaptation capacity of the territory as fundamental purposes of territorial planning at national level. In addition, the plan defines the need for territorial planning to prepare communities for future crisis management and emergencies (MUD and NTPA, 2016). Resilience as an objective and approach is developed further in the vision and in the separate chapter of natural systems. The territorial plan of the coastal area is developed in similar tones. At the local level, a significant achievement is that 60 out of 61 municipalities have adopted, or are in the final stage of adopting a territorial plan. The latter is a very comprehensive document, which, also by law, makes strong reference to environmental concerns. Each plan is equipped with a strategic environmental assessment that deals with a multitude of issues of local resilience, including adaptation. Yet, the level of addressing resilience and adaptation is not equal among municipalities. In certain cases, also due to the high presence of natural hazards and disaster risks, adaptation-based planning is strongly evident. In other cases, this approach is weaker. Furthermore, the plans may contain a high range of expensive technical/infrastructural measures to build resilience, while soft measures, including capacity building for communities, are less eminent. Most importantly, while the environmental assessment analysis may be quite detailed, the local plans miss vulnerability and risks analyses. As a result,

the proposals for land use and critical infrastructures may have not sufficiently taken into consideration disaster risks and adaptation needs5.

2.2 Institutional coordination and multi-level governance

11. Achieving local resilience requires a system of multi-level governance, which can deal with complex and cyclical processes for enabling systems (affected by or at risk) to resist hazard's shock, absorb it and accommodate the effects, adapt, recover and transform by reaching a new equilibrium. Planning, preparedness, response, recovery, mitigation, and resource management are the steps that stakeholders should follow to enable local resilience (figure 1). This requires for technical, management, and financial capacities at every single step. Previous reports on vulnerability and capacity assessments in Albania, and meetings conducted for this paper with national and local institutions show that these capacities are yet in an embryonic stage, regardless of the support received by donors in the last 20 years. This is not to say that Albania lacks institutions and structures to contribute to local resilience; rather these institutions are not equally strong (among levels of governance and among local government units), are in shortage of financial resources and appropriate infrastructures to deal with emergencies, and have a weak inter-institutional coordination The current institutional structure for dealing with civil protection is deducted by the legislation (figure 2). Local resilience on the other hand is not subject to a specific institutional structure. Being an objective, approach and system feature, local resilience does not need a particular institutional structure; it rather needs a system of multi-level governance that brings together all actors in interaction and cooperation aiming at achieving resilience. The following analysis provides a general idea about the capacities of institutions currently involved in this system of multi-level governance.

12. Starting with disaster management, according to the legislation each municipality should have a directorate or department that is responsible on civil protection, and should establish a permanent civil protection committee. Due to lack of bylaws, it is not clear whether the committee should encompass stakeholders outside of the municipality or not. However, in principle, such a committee serves as the main entity that coordinates local government efforts with other local stakeholders, including citizens and businesses. Therefore, it would be more efficient for such a committee to include members beyond the municipal staff. Yet, being a permanent committee, it should engage members who are committed to contribute on a permanent basis, and represent the interests of the local community.

In Albania, such committees were established under the previous legislation too and, particularly after the November 26th earthquake, municipalities are rushing to renew them as per the newly approved legislation. Currently, Municipalities are making use of the previous bylaws, which will remain in force until the new ones are adopted, and for as long as they do not conflict with the law no. 45/2019. The composition and the effectiveness of such committees varies from one municipality to the other, based on risk exposure. Municipalities that experience risks frequently have a better cooperation or involvement of the local civil protection committee. Yet, the efficiency of cooperation is subject to financial means and equipment needed to respond to disaster emergencies, as well as to technical knowledge on response and mitigation actions. Furthermore, while the committees may be active during emergency response, their engagement during planning, mitigation and preparedness stages of disaster risk reduction is currently minimal. This could be mostly due to low level of awareness among stakeholders for their role in local resilience building and for risks their communities are exposed to, including potential effects from disasters.

13. The local directorates on civil protection are rather weak from a structural perspective as well. Tirana, being the largest municipality, has a department of seven employees, including the director. They declare the staff is not sufficient to handle tasks. In other municipalities, the number of employees is more limited, ranging from 1-5 people. Most of their role is focussed on identifying losses or damages once the disaster happens and on participating in emergency response. The latter is usually focussed on evacuation, search and rescue, life-saving and emergency medical support, and provision of basic supplies, such as temporary shelter (short-term), food and clothes (see also UNDP and Red Cross Albania, 2004). In case financial compensation is applied

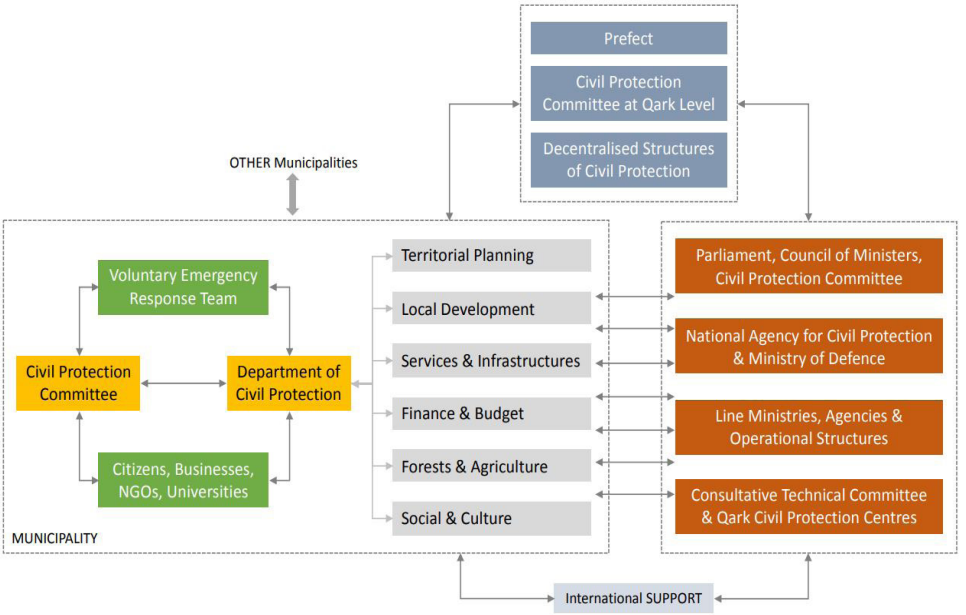

Fig. 2 / Institutional set-up for civil protection at local level. Source / Author based on the law no. 45/2019 "On civil protection"

as a measure, municipalities facilitate the allocation process. Yet, in general, prevention and preparedness measures and continued support, including economic compensation, social recovery, permanent housing, education access and long-term health support, etc. have usually been weak. Municipalities have not even established simple early warning systems, such as city alarm infrastructure, digital systems of risk detection and mass warning, etc.

As a matter of fact, meetings conducted with local and national institutions confirmed the need for substantial and continuous training in the disaster risk reduction domain. Municipalities confirmed also that their knowledge on local resilience building is limited if not absent. In addition, they recognise the need for adaptation measures in view of climate change events, but confirm not having enough knowledge on how to achieve adaptation. The local territorial plans are so far the only planning instruments to have a certain adaptation perspective, which in many cases is limited, while resilience and disaster risk reduction are usually not mentioned at all.7 Municipal directorates cooperate among them when conducting territorial and strategic planning, but so far there has been no meaningful inter-departmental coordination within municipalities for preparing risks and vulnerability analyses, disaster risk reduction strategies and plans.

14. There are a number of other services/ local functions that municipalities are responsible of and are interrelated with local resilience. Since 2015, as defined by the law no. 139/2015, "On local self-governance" and the law no. 152/2015, "On the service of fire protection and rescue", municipalities manage fire protection within their territories. According to the legislation, each municipality should have at least one firefighter per 1,500-2,000 inhabitants and each station should have no less than 14 professional firefighters. In these conditions, Tirana alone must have around 400-500 firefighters. Yet, according to Portavendore (2019) the capital city has 80 professionals, while in total there are 1,200 firefighters in Albania. The same source states that infrastructural capacities are very low and so have been the investments made to upgrade the service. The absence of proper capacities is felt the most in managing forest fires, which are common during summer in various locations across the country. Besides the professional unit, each municipality should organise the voluntary service for fire protection and rescue. However, for reasons explained above, voluntary services are missing. A consolidated preventive measure based on resilience thinking, is the submission of a fire protection project for each building, next to the other technical drawings, as part of the requirements for building permits procedures. The conformity of such projects is validated by the local departments of fire protection and rescue.

15. Albanian municipalities can play a crucial role in improving local resilience through sectors such as solid waste

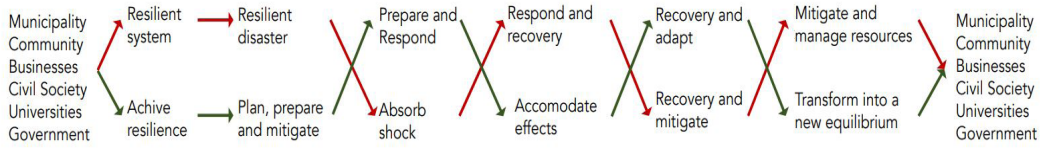

Fig. 1 / Local resilience: System, Actors, Governance. Source / Author

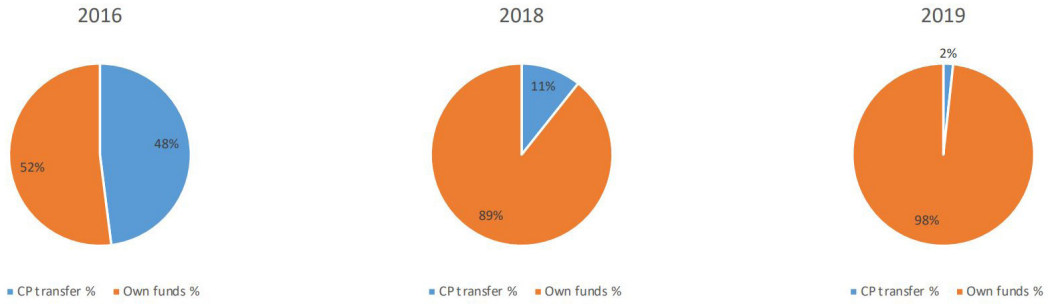

Fig. 3 / Civil emergency and protection from fire: Intergovernmental transfer versus own funds. Source / www.financatvendore.al and Ministry of Finance

management, drinking water provision, wastewater treatment, and maintenance and operation of drainage and irrigation for agricultural areas and for stormwater. Besides having a direct effect on the quality of life and safety (of citizens and ecosystems), these sectors require substantial financial resources for a proper operation. Resilience-based approaches would lower costs and improve service delivery efficiency, while also promoting adaptation techniques and solutions. Such approaches could include nature-based solutions, green infrastructure and circular economy initiatives, but the knowledge needed to streamline these approaches in the daily operations of Albanian municipalities is missing. Besides local investments, the above sectors, particularly solid waste and water and wastewater have received significant support from donor projects over the years, investing not only on infrastructure, but on development of human capacities and management instruments as well. Yet, there are only 5 landfills and one incinerator, with seven qarks out of 12 depositing urban waste only in open dumpsites and the remaining five using also dumpsites (AKM, 2017); 69% of the population receives waste management services and only 30% of the total urban waste is dispatched to the landfill (Co-PLAN, 2018). Furthermore, according Eurostat, in 2017, only 7.34% of the Albanian population had connection to secondary wastewater treatment. In terms of circular economy, there yet few initiatives country wide, which are scattered and are not part of a common policy platform (Co-PLAN, 2018).

16.Communication and cooperation with citizens are key aspects of the performance of local civil protection directorates. Previous studies show that citizens are aware that support on emergencies and civil protection should primarily come from the local government, fire protection brigades and the police forces, and the hospitals. However, citizens are usually dissatisfied with the level of service provided by the emergency institutions (local, national and operational structures). While various cases of successful support in life-saving are reported by citizens and institutions, it is the lack of follow-up support, training and awareness raising after the emergency stage that dominates citizens perceptions on service's valuation. This could be summarized as what the UNDP and Red Cross Albania (2004) describe as lack of communication between public institutions responsible on civil protection and community.

17. Furthermore, citizens feel they have cooperated better with some local and international voluntary organisations during emergencies, rather than with public institutions and with voluntary groups to be established by the municipalities or through their facilitation. Local voluntary emergency response teams are not present to date. Besides the fact that citizen voluntary engagement is rather stigmatized in Albania (due to the past communist inheritance), a major factor impeding municipalities in organizing such teams is the absence of the respective legislation. Municipalities

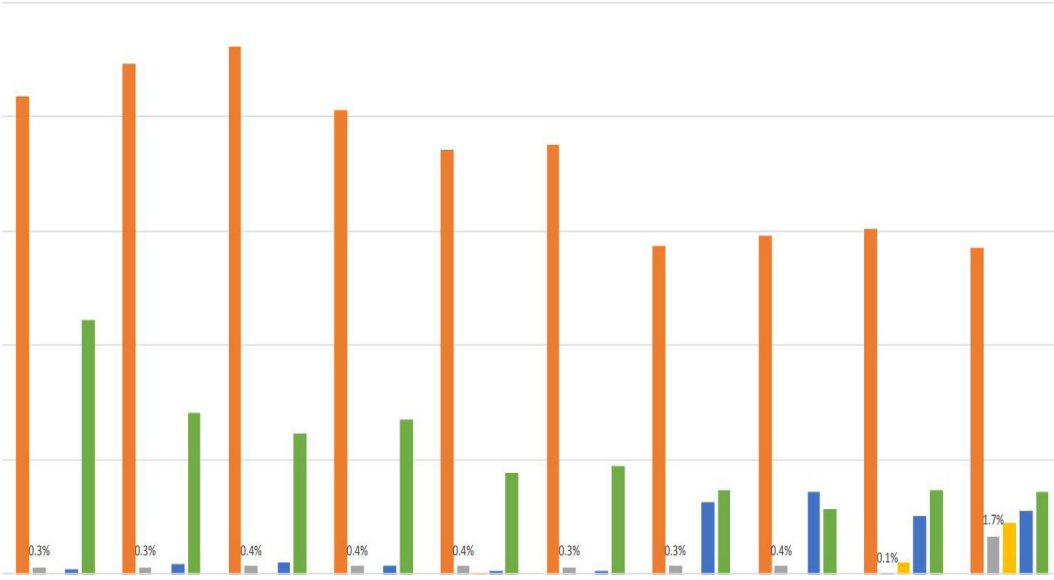

Fig. 4 / Local expenditures for a group of functions that are directly related to local resilience
Source / www.financatvendore.al and Ministry of Finance

could also establish the teams based on the law on local self-governance, but they still would need specific legislation to set limits and regulations of involvement, responsibilities, measures for safety and insurance, liabilities and immunity, training, etc.

18. At the national level, the institutional structure that should contribute to resilience building is complex and operationally weak. There are a number of institutions with responsibilities on specific aspects of civil protection, disaster risk reduction, climate change adaptation, critical infrastructure, emergency response, planning and mitigation, etc. However, horizontal cooperation is not satisfactory, while some of these institutions need empowerment and capacity development. Thus, the National Agency for Civil Protection, embedded within the Ministry of Defence, has currently nine experts.8 The Agency is expected to increase its staff to 106 employees in the next two years, to fulfil needs and the legal requirements. The empowerment of the Agency would be beneficial not only in terms of its direct contribution to civil protection and emergency response, but also in terms of capacity development for the local institutions, municipalities included.
Institutional ambiguity is present in other sectors too, particularly regarding climate change. According to Ministry of Environment, the situation will clarify soon, once the legislation is finally adopted and institutional structures are established. However, to date, the absence of a directorate of climate change (established since years within the ministry responsible on environment, but ceasing to exist in 2016) has created an institutional vacuum and jeopardised the commitments of Albania in relation to the Convention on Climate Change (Gjoka et al. 2018) as well as the dynamic effects on social, ecological, and atmospheric systems, constitute the core subject matter of this article. In Albania, the impacts of climate change have been felt primarily in the agricultural and energy sector, and are expected to grow in the future (GoA, 2016. Based on the three Albania's National Communications on Climate Change to the Conference of Parties9 and to achieve the targets of COP2110, Albania ambitiously plans to reduce its CO2 emissions by 12% by 2030, focusing (in the case of forestry sector) on technological measures and reduced forest exploitation, without though considering so far forest governance (Toto, 2019a). The latter takes place mostly at the local level, where the respective capacities are very limited compared to the task at hand. Under the frame of local government decentralization, the Government of Albania undertook a process of [communal] forests property transfer to local governments (around 83% of forests area in Albania), which was finalised in 2008, but without concluding the registration at the immovable property register to date, due to lack of financial resources. In these circumstances, local government officials struggle with forest management and have neither means, nor incentives to streamline

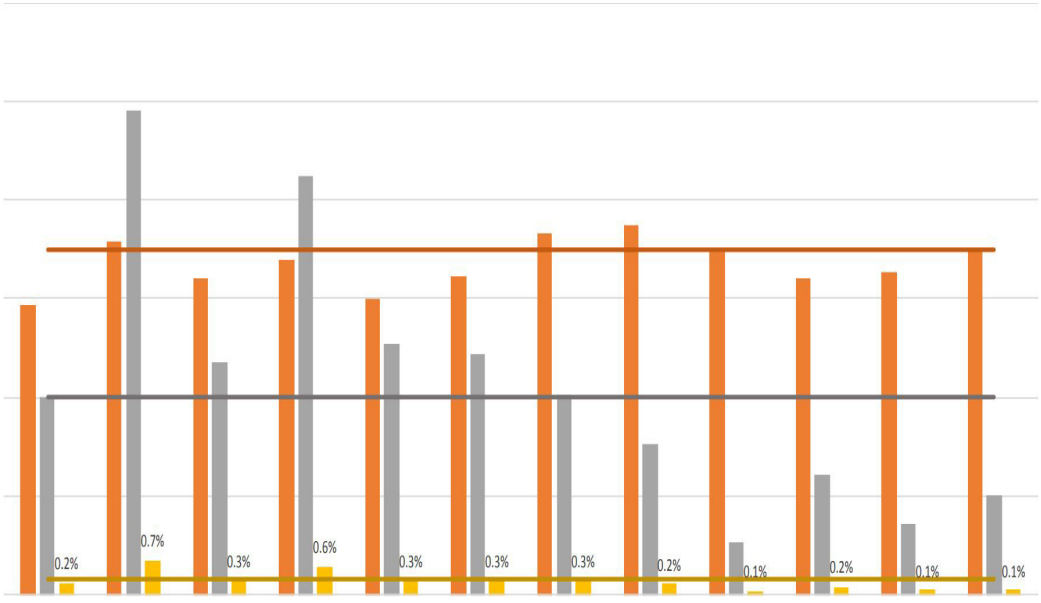

Fig. 5/ State budget for civil emergencies over years
Source / State budgets from Ministry of Finance

resilience thinking in forest governance. Furthermore, implementation of forest common pool resources, as a resilient governance solution, depends as yet only on the willingness of local official and proactiveness of local communities, without a proper legal, policy and financial back-up (ibid.).

2.3 Funding and resources- Albanian municipalities continue facing significant budget limitations, though the overall avail- able financial resources show for an upward trend in the last 5 years (financatvendore.al). The revisited decentralisation reform of 2015, assigned new functions to the municipalities, adding more local responsibilities that relate to ecological and territorial resilience, such as agriculture (irrigation and drainage networks), forestry, fisheries and fire protection. Therefore, funds need- ed to ensure resilience, including adaptation, emergency and disaster risk reduction should the- oretically constitute a significant portion in local budgets.

19. By law, municipalities are now entitled to plan an emergency fund equal to 4% of the annual budget. The expenditures on civil emergency and fire protection show an increase for the past 4 years, which remains however below 4% or even 3% (the limit defined by the previous law on civil emergency). According to the data on expenditures from the Ministry of Finance, local governments spent on average, for 2016-2019, 1.9% of their budget for civil emergency and fire protection, while in 2019 this share was 2.5%. These expenditures are covered through the intergovernmental transfer and own funds. The following pie charts (figure 3) show that own funds dedicated to civil emergency and fire protection have increased in share compared to the transfer, though the transfer has increased as well from 2016 to 2019. The total of local expendi- tures for emergency and fire protection was more than 85 milliard lekë compared to around 69 milliard lekë in 2016. According to the Prefect of qark of Durrës, the transfer may not necessarily be used for disaster risk reduction activities and it is often diverted by municipalities into other needs. Furthermore, the value of 4% of the annual budget is not sufficient to cover disaster risk reduction needs.11

20. The funds for local resilience do not constitute a specific budget line for municipalities, primarily because activities for building local resilience are not specified neither in local strategies, nor in implementation plans. Furthermore, such activities fall under a large number of local functions. Figure 4 shows some of the functions that could directly relate to territorial and ecological resilience building. Out of these five functions, funds for basic infrastructures (water supply, solid waste, wastewater, etc.) constitute a significant portion of local expenditures, with a downward trend from 2010 to 2019. The expenditures on agriculture, forestry, fishing and hunting remain below 5% of the total local expenditures and appear more significantly only after 2016, after the approval of the new law on local self-governance. The funds on environmental protection and public safety and protection

are almost insignificant over the years, remaining below 1%, with a minor increase in 2019.

21. When disasters happen, municipalities rely largely on the intervention of the national government too. Civil protection (historically assigned in state budgets as civil emergency) has remained below 1% of the state budget since 2009, with relatively higher levels in 2010 and 2012 (0.7% and 0.6% respectively). Since 2012, the values have dropped gradually to 0.1%. Similarly, the budget share of civil emergency within funds planned for the respective ministry has also reduced following the same pattern, while the ministry's budget12 has had little fluctuations along the years.

22. National government expenditures on civil emergencies appear different from the budgeted amounts. It is difficult to draw a trend line on these differences for the period 2014-2019, and this might relate the occurrence of disasters during these years. While in 2014 and 2018, the expenditures were 5% and 26% lower than the respective budgets for civil emergency, in 2015 and 2019 these values were 82% and 69% higher respectively.

23. Various sources state that the most frequent hazard and therefore disaster in Albania is floods (see for instance UNDP & Red Cross Albania, 2004). Often, such events happen at a small scale and are not always mediatised and made known to the public at large, but their effect on the local communities, though isolated, is disastrous. Most municipalities confirm that they have to deal with floods at different territorial scales and locations, while lacking the appropriate means (financial, human and logistical) to do manage the disaster. These annually repeating floods are not governed with a risk reduction approach, due to the 'perceptually low' societal impact – isolated in one specific community, with the exception of the major flood events. Hence, municipalities are not able to manage emergencies, and do not receive support from the national government agencies because other priorities overtake the emergencies-related agenda. For instance, the municipality of Kurbin reports on a city creek becoming a torrent and flooding regularly the adjacent neighbourhood during the rainy months. The municipality has prepared various projects that could be applied to avoid flooding, but with a cost up to
2.3 million Euro, implementation seems far from possible. According to the legislation, the municipality should plan an emergency fund equal to 4% of the local budget. In the case of Kurbin, this amount would be at minimum 30 million Lekë (approximately 245,000 Euro13), while the budgeted amount for 2020 is not more than 9 million Lekë (approximately 74,000 Euro).
Tirana reports currently a budget of 50 million lekë for civil emergencies, which is however below the level of 4%. In all three municipalities, the interviewed experts report for lack of a specific financial plan dedicated to disaster risk reduction, with principles of resilience and adaptation. Hence, financially speaking, municipalities only plan for an emergency fund (usually below the legally required levels) and do not plan financially for preparedness actions.

24. Finally, the situation of November 26th earthquake represents an exception in terms of interventions and funds, due to the magnitude of exposure and disaster effects. International financial support was pledged to Albania to sustain the implementation of a recovery plan known as the 'reconstruction plan', with more than 295 million Euro pledged in the form of grants, 853 million as loans, and around 3.4 million in kind (European Commission, 2020). In this frame, some major donor-enabled programs are expected to initiate focusing on soft measures of empowering preparedness, through policy and institutional support, training and planning. While the recovery plan is facilitated by the national government, the affected municipalities report unequal levels of their involvement in the process. Smaller municipalities, such as Kurbin or Lezhë, are fully dependent on government support. Tirana, on the other hand is managing by itself the reconstruction process, risk assessment, etc.

2.4 Knowledge for disaster risk management and adaptation planning

25. One of the main handicaps in dealing with disaster risk reduction and resilience building at local level is absence of data (historical and current) organised in timeseries for the whole territory. These data should produce knowledge that leads to risk and vulnerability assessments, planning, and preparedness and response measures in an integrated approach. Over the years, there have been several initiatives, mainly supported by donors14, aiming, among others, at establishing platforms of information and knowledge. However, these initiatives have to date a scattered spatial-temporal impact, mainly

because municipalities have not invested regularly in building stable institutional structures for disaster risk reduction, less so for resilience. Similarly, municipalities have low capacities in managing sectors such as agriculture, environment and forestry, which are new in the current set-up of responsibilities and with insufficient funds. Municipalities do not carry out vulnerability and risk assessments as a routine process. Such a task is now foreseen to take place on the basis of the law on civil protection, but Lezha municipality is currently the only one to have started the process, with the support of UNDP Albania. Due to proximity factors, municipalities have information on hazards in their territories, but in several cases this information (including historical one) is not organised into databases, suitable for planning and management. Furthermore, as municipalities do not run monitoring and early warning systems, regular data on natural phenomena are not registered for use in local risk scenarios building and risks and vulnerability assessments.

26. At national level, the database of the institute of geosciences (IGJEUM) is a very good source, but accessibility of information by municipalities is still to be ensured. Yet, the implementation of DesInventar15 in Albania in 2014, revealed the lack of historical, accurate and well organised data on natural hazards and disasters. The data reflected heterogeneity and discontinuity, which can be interpreted within the wider frame of lack of data and well-organised information for planning and management purposes within the various sectors. Data from the National Operational Centre in the Ministry of Internal Affairs were stored in reports (DesInventar), and other data could be subtracted through the requests for compensation after the different disaster events. The National Archive has also data on floods and other events up to late 1980s. Other sources include Prefectures and, in some cases, also Municipalities with data dedicated to the specific events, or indirect data that could support evidence on the hazards, vulnerability, and risks. Often these data are in the form of printed reports or maps that need to be digitised

27. Planning instruments are also a good source of information and knowledge. However, in terms of local instruments for dealing with disaster risk reduction, adaptation, and other aspects of local resilience (such as circular economy, ecosystem services in planning, etc.), the situation is rather mixed. Substantial support is reported for Albanian institutions, and there have been several projects and initiatives in the last 20 years, having disaster risk management and climate change and adaptation at their focus. For instance, a comprehensive regional flood risk management plan was prepared by the Prefecture, Ministry of Environment and Qark of Shkodër in 2015 for the two major areas affected by floods in Shkodër region. The city of Shkodër and seven administrative units benefited from this planning and capacity building support. The plan was prepared under the frame of Climate Change Adaptation in Western Balkans, implemented by GIZ.

28. Continuous support has been provided by UNDP, particularly under the frame of the work of UNDRR16, such as implementation of DesInventar in 2014-2015. Albania has endorsed the Sendai framework for disaster risk reduction 2015-2030, which defines a goal, seven targets, four priorities and number of guiding principles. Yet the government does not have a national platform for implementation on DRR based on the Sendai framework. While all of the priorities of the Sendai framework are strongly interlinked among them, there is a specific priority on strengthening disaster risk governance, which requires for clear and shared responsibilities, cooperation and capacities at all levels of actors. In 2018, Albania had all Sendai targets validated and reported on them. Albania is also member of the "Disaster Preparedness and Prevention Initiative for South Eastern Europe", launched by Stability Pact for South East Europe in 2000, with 10 member countries (Balkans and Turkey) and with the overall goal that of fostering regional cooperation in disaster preparedness and prevention. EU has supported an initiative on Disaster Risk Assessment and Mapping in the Western Balkan and Turkey, recently completed, focusing on disaster loss data, risk assessments, and risk mapping, aiming at increasing beneficiaries' capabilities to ensure proper disaster risk management at different territorial levels. Another EU supported project was implemented during 2017-2018 on improving the national early warning system and flood prevention in Albania, which in the frame of providing capacity building and technical assistance, it supported the general directorate at the national level to create flood hazard maps.
The World Bank has also supported the

government of Albania during 2008-2013 with a project on Albania Disaster Risk Mitigation and Adaptation, focusing on capacity building, planning support and even digitization of hydrological and meteorological data (of two decades, until 2011), including some investments. On the other hand, local governments report having substantial knowledge on hazards and risks on their territories, but do not conduct mapping and assessments and do not build databases. Hence the knowledge remains with people memories and it is short-lived because it is not transmitted within the institution and to other stakeholders.

29. Furthermore, recently there are also initiatives on implementing circular economy, common pool governance of natural resources (mostly on forests), and on inclusion of ecosystem services thinking/valuation in spatial and/or environmental planning. For instance, the ministry of environment has been implementing a 4 years project on environmental services, at least two programs on the protection of lagoons and ecosystem-based adaptation, etc. However, such projects are mostly implemented at the national level. Even when beneficiaries are local (such as forestry projects, or the Kune-Vaini lagoon), these are still managed nationally. On the other hand, the local initiatives on circular economy are mostly carried out by the private sector that is endorsing circularity principles in its chain of production.

30. The above initiatives have produced a series of disaster risk reduction instruments at local or regional levels, as well as databases and knowledge. However, to date, the head of the National Civil Protection Agency declares that the Agency does not possess any of these instruments and has no access to the databases, except for DesInventar and some information from IGJEUM17. The Agency may receive information from the other public institutions if requesting for it, under the clause of national civil emergency. Yet, this is a process that the Agency should go through, and which might require time and resources. The establishment of the Nation Operations Centre of Civil Protection (planned with the support of the Italian government) would, among others, operate and maintain an integrated information system on hazards, disasters, risk and related vulnerabilities. However, this is yet a plan and full operationalisation would require time. The municipalities, on the other hand, unless they have proactively participated in the processes producing plans and databases, therefore possessing the information and the instruments, have less access to national institutions for withdrawing information related to their territories.

3. Policy conclusions and recommendations for building local resilience through better governance

3.1 Conclusions

31. Local resilience remains still largely undefined as a policy objective in Albania. The concept is already set in the disaster risk reduction legislation (law on civil protection), therefore expected to be addressed in the national strategy for civil protection as well. It is not clear at this stage, whether the strategy will include also objectives and measures that affect other sectors too, hence taking an integrated approach to [local] resilience.

32. The civil protection law, adopted during 2019 and with bylaws still pending, addresses resilience in a direct way. The sectorial legislation, enables local resilience building rather indirectly, with legislation on environment, climate change, biodiversity, water resources and territorial planning being much more receptive to local resilience than other sectorial laws. Similarly, strategies and planning instruments of the abovementioned sectors, at local and national level, are more oriented towards resilience building. Still, these instruments need further improvement in terms of clarity, coherence, monitoring, and financial resources dedicated to local resilience.

33. Furthermore, the institutional structure for local resilience is also fragmented, as a reflection to the legal framework. The law on civil protection defines a number of institutions at national and local level that have the responsibility to deal with disaster risk reduction and therefore also resilience. However, achieving socio-ecological and territorial resilience is a multidimensional and multisectoral task. While the establishment of local civil protection institutions, based on the respective legislation is yet to be completed, the other public sectors should also create structures that coordinate with those of civil protection to achieve resilience at local and national levels.

34. In addition, financial resources for integrated civil protection, as required by the respective law, are limited at both government levels, and even scarcer at

the local level. So far, municipalities cannot even make it to budget the legally required emergency fund of 4% of their budget. Furthermore, the current absence of key documents such as, risk and vulnerability assessment, disaster risk reduction strategies, and emergency plans does not allow municipalities to plan funds for all stages of civil protection. Therefore, they merely limit to emergency funds.

35. In addition, as local resilience is not a specific local government task and actions for it are to be spread across the various local government functions, municipalities can hardly achieve any financial planning and expenditure tracking for local resilience. This could imply that: 1) if a thorough analysis of the resilience actions implemented during the delivery of local services was made and respective expenditures were tracked, most probably resilience expenditures would be higher than currently conceived; 2) inter-sectorial planning for local resilience would reveal that cooperation and coordination between sectors leads to several simple actions that guarantee resilience and financial efficiency within the current budgets. To date is possible to track expenditures on civil emergency and fire protection.

36. Finally, local knowledge on natural hazards, disaster risks and local vulnerability is limited and is almost 'anecdotal'. Hence, local experts with historical knowledge of the territories have plenty of information which is not organised into specific databases and is verbally transferred to younger experts. In some cases, municipalities have expert reports delivered during the implementation of donor supported projects. The national institutions that monitor and carry out studies on climate, hydrology, geology, seismic events, etc. have their own databases which are not easily and real-time accessible for municipalities. Besides, these databases are not all of them up-to-date and micro data are not supplied for the whole territory.

3.2 Recommendations

Local governments can and should play an important role in dealing with disasters and increasing uncertainties through building resilient socio-ecological and territorial systems. They are best suited for this especially due to their proximity to people and territories. However, in Albania, local governments appear as the weaker link in the resilience building system, and therefore a number of policy measures should be taken sooner rather than later to restore their position.

37. To start with, a policy for socio-ecological and territorial resilience is needed at national level. The strategy for civil protection can play an important role in this regard, but the government should ensure cross-sectoral coordination and cooperation in achieving resilience. This means that policies and actions for climate adaptation, territorial planning, infrastructures, water resources, production of energy, protection of forests and fisheries, etc. would be aligned towards achieving the resilience objective. This would amplify the current scope of the civil protection law and would induce a new mentality of planning and use of natural resources, which moves away from merely sectorial perspectives to territorial ones.

38. At the local level, municipalities should plan time and resources for establishing risk reduction platforms through assessing disaster risks and related vulnerabilities, and adopting disaster risk reduction strategies and emergency plans, as defined by law. This task is urgent and vital and should be assisted by the national government and become a priority of support for the donor community as well. The adoption of such strategies and plans is a key step in local preparedness, both technical and financial, and it would also serve as a medium of information and communication with communities and other non-state actors.

39. Municipalities should match the legal requirement of 4% of their budget for civil emergencies. However, besides the emergency funds, municipalities should plan financial resources for the resilience objective, which could become a specific budget line and should track the respective expenditures.

40. However, in order to plan for resilience and most importantly, implement measures contained in plans, local governments need to develop and/or strengthen technical capacities. *This translates into some critical actions:*

- Municipalities establishing departments of civil protection that have adequate number of experts and diversified expertise.
- Local staff is trained on continuous bases for technical, scientific and legal knowledge.
- The civil protection department cooperates with other sectors on several

aspects related to local resilience.

- Municipalities establish their own databases of hazards, disaster risks and vulnerability,

with historical data for their territories. The information systems will allow for real-time planning and scenario building, and therefore informed decision-making and implementation of measures. In this respect, the national government could also help through building a Risk Data Hub, which would contain information, tools and methodologies, to use at any layer of territorial and social granularity.

- Municipalities are provided immediate access to the national databases on climate, hydrology, geology and seismic hazards. This should not however be perceived by municipalities as an opportunity to avoid their responsibility in building their own data-sets, which make use of local information and communication with citizens.
- Municipalities, with the support of other actors, build local resilience dashboards with

dynamic indicators that serve to benchmarking resilience, comparing local governments and territories among them, and as monitoring systems for early prevention. Cities and territories are often exposed to several hazards, or at least more than one, simultaneously. Preparedness starts with information fetched to planning and local decision making.

- Municipalities embrace international initiatives and become part of resilience and adaptation

networks, to enhance knowledge and benefit from financial and technical support.

41.In addition, the cooperation of municipalities with the local communities, and non- government and business actors is crucial to achieving local resilience. For this, municipalities should share knowledge with and raise awareness of communities on disaster risks and self- resilience, to enable community preparedness. This is not to be considered as very advanced science, difficult to grasp for lay people. On the contrary it is science that should be interpreted through local dialectics, reflecting local concerns for a common future. This is what Krellenberg (2012, p.233) calls a "science-policy approach".

42. Another important aspect is that of more investments in introducing new critical infrastructures and maintaining the existing ones. Besides hard measures, the critical infrastructures could be improved through soft measures too, which are innovative forms of green infrastructures, such as natural water retention pools/basins using local topography, reinforcement of dunes through the respective vegetation in coastal areas, etc. These interventions protect urban areas and natural ecosystems and their services, by functioning on the basis of the ecosystem-based approach. The cost of such interventions is also usually lower than that of hard infrastructures, while the efficiency of protection depends on the area and on the hazards that affect it. Nevertheless, the combination of measures, hence the integrative approach, based on cost-benefit analysis, would provide solutions to several of the current disaster impacts in a mid-term period and at reasonable costs.

43. Finally, as resilience should be addressed territorially and sectorially, municipalities must instigate

resilience and adaptation efforts in all sectors in terms of:

- Disaster risk reduction (DRR), by adopting specific/targeted sectorial strategies and actions that contribute to reducing disaster risks, for instance in relation to water resources management and floods, infrastructures (energy, water, transportation), etc. Besides what national bodies do, municipalities as well should assess and propose measures for areas of national importance within their territories. This is crucial to avoiding the negative effects of fragmented territorial knowledge, due to administrative jurisdictions. Municipalities should also participate as an active actor in formulating the River Basin Management Plans, where implementation is territorial and thus heavily dependent on Municipalities.
- Ecosystem services protection through spatial planning and management of resources at local level. Ecosystem services reduce vulnerabilities and increase resilience, and the

respective knowledge should guide decision-making. Benefits from ecosystem services are

highly recognized by the EU Adaptation Strategy, are streamlined in nature-based solutions, green infrastructure projects, natural water retention measures, and disaster risk reduction measures/actions.

- Avoidance of administrative fragmentation obstacles, which derive from the mismatch between jurisdictional territories on one side and ecosystem boundaries and hazards' basins on the

other. In this respect, territorial planning, being holistic by nature, can play a crucial role, and the very first step would be to review general local territorial plans. The review should consider completion of plans with adaptation, disaster risk reduction, and resilience objectives. The data should also be collected based on ecosystems and risk prone areas, rather than on administrative boundaries. Participatory risk assessments would constitute a valuable tool in completing knowledge beyond political jurisdictions.

4. Additional information of relevance

Some of the international processes, platforms, networks, or projects and programs that support or promote resilience thinking and acting, and are relevant to the Albanian municipalities, with citations from the respective sites, include:

- The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) was the first major agreement of the post-2015 development agenda and provides Member States with concrete actions to protect development gains from the risk of disaster. Albania is member state and each state has the primary role to reduce disaster risk sharing the responsibility with other stakeholders including local government, the private sector and other stakeholders. https://www.undrr.org/implementing-sendai-framework/what-sf.
- The World Bank Group's City Resilience Program (CRP), established in 2017, to empower cities pursuing investments that build greater resilience to climate and disaster risks, and to access the financing necessary to ensure that those investments come to fruition. https:// www.gfdrr.org/en/crp.
- The European Climate Adaptation Platform, Climate-ADAPT is a partnership between the European Commission and the European Environment Agency (EEA). Climate-ADAPT is maintained by the EEA with the support of the European Topic Centre on Climate Change Impacts, Vulnerability and Adaptation (ETC/CCA). The aim is to support Europe in adapting to climate change helping users to access and share relevant data and information. In terms of DRR, EC supports the Sendai framework for Disaster Risk Reduction and it has published in 2016 an action plan for its implementation. https://climate-adapt.eea.europa.eu.
- The important role of Ecosystem-based Adaptation (EbA) to enhance local resilience is recognised in city networks concerning the European municipalities, e.g. the Covenant of Mayors for Climate and Energy, C40 Cities (https://www.c40.org), the Making cities resilient campaign (UNDRR), the Resilient Cities annual conferences (Local Governments for Sustainability, ICLEI, http://resilient-cities.iclei.org), and the 100 Resilient Cities (http://www.100resilientcities.org/, Rockefeller Foundation).
- The EU Covenant of Mayors for Climate & Energy brings together thousands of local governments voluntarily committed to implementing EU climate and energy objectives. Signatories endorse a shared vision for 2050: accelerating the decarbonisation of their territories, strengthening their capacity to adapt to unavoidable climate change impacts, and allowing their citizens to access secure, sustainable and affordable energy. Signatory cities pledge action to support implementation of the EU 40% greenhouse gas-reduction target by 2030 and the adoption of a joint approach to tackling mitigation and adaptation to climate change. Albanian signatories are Finiq, Dropull, Korçë, Tiranë, Shkodër. There are no coordinators and no supporters from Albania. https://www.covenantofmayors.eu/en/.
- Studies, reports and factsheets on green infrastructure funded by the European Commission: http://ec.europa.eu/environment/nature/ecosystems/studies/index_en.htm
- Nature-Based Solutions (NBS) are addressed in several projects and programs, with more information to be found in: https://ec.europa.eu/research/environment/index.cfm?pg=nbs; the platform ThinkNature, a case study and resources hub dedicated to NBS https://platform. think-nature.eu/; the Nature-based Urban Innovation NATURVATION website containing information on almost 1,000 examples of NBS from across 100 European cities https:// naturvation.eu/about; the OPPLA platform aiming at sharing practical knowledge on natural capital, ecosystem services and NBS through case studies, products and tools https:// www.oppla.eu/about; the Natural Water Retention Measures (NWRM) platform gathering information on actions and case studies for green infrastructure applied to the water sector http://nwrm.eu/.
- Ecosystem-based implementation projects relevant for climate change

adaptation (e.g. conservational agriculture and forestry practices, green and blue infrastructure or urban climate adaptation and resilience) can be found on LIFE programme: http://ec.europa.eu/environment/life/index.htm. Supporting scientific knowledge can be accessed on the TEEB platform, the Economics of Ecosystems and Biodiversity (http://www.teebweb.org) and on the Millennium Ecosystem Assessment platform (https://www.millenniumassessment.org/ en/index.html).

- Information on green infrastructure, including green infrastructure activities within the Member States could be accessed on the Biodiversity Information System for Europe, BISE, https://biodiversity.europa.eu/topics/green-infrastructure.
- The Disaster Risk Management Knowledge Center (DRMKC) https://drmkc.jrc.ec.europa.eu/risk-data-hub/, provides knowledge and evidence at all levels and at all stages of the Disaster Risk Management cycle (prevention, reduction, preparedness, response and recovery), including those disasters associated to climate change https://ec.europa.eu/ knowledge4policy/disaster-risk/about_en.

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Local Disaster Reduction in the Municipality of Lezha

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Methodology
The methodology comprises several factors:
1. Legal requirements (Jurisdictional). The first phase consist od a legal orientation and is concerned with procuring the essential permits from the municipality or other component institutions.
2. The selection of competent architects and structural engineers. According th Albanian law, engineers who will address this issue must be registred as structural engineers with the appropiate license. Professionals must have demonstrated expertise in the analysis, designm and retrofitting of structures in seismically active regions. Experts should also be acquainted with the engineering and design principles of seismic performance engineering. Experience with inelastic analysis procedures and knowledge of the behavior of various structural materials are required to conudct such an analysis. Lastly, it is necessary to have a fundamental comprehesion of structural dynamics and the behavior of various structures subjected to ground motion.
3. Establishing performance goals
This stage relates to the determination of the structure's performance objectives using empirical or analytical methods, which include: Structural stability Limited security Life insurance Damage control Immediate use.
4.Structure assessment
Through thorough inspection, the goal is to collect data regarding existing structural designs, material resistance, potential interventions, and previous damage. This inspection can be conducted in:
5.Drawings Control Visual Inspection Preliminary Calculations
Identifying Seismic Capacity
Using advanced modeling and analytical techniques, capacity curves are derived, allowing for a comprehensive evaluation of building design by capacity. Empirical methods, based on visual inspection for damage to the primary structural elements, and analytical methods, based on the characteristics of materials, the details of construction, the method of modeling, and the results of this model (force-displacement curves), are utilized.
6. Establishment of seismic necessities
This phase relates to seismic hazards, capacity interaction, and displacement targets.
7. Assessment of seismic efficacy
After the performance point has been evaluated, the engineer verifies the performance of the building using acceptability criteria, and the results are used to inform the government's decision-making process, taking safety and risk into consideration.
8.Determining whether it requires restoration, reinforcement, or demolition. The group of engineers determines whether the examined object will be repaired, reinforced using various techniques, or demolished based on the results of the preceding phases. Traditional or contemporary techniques determine the choice of reinforcement technique.
9.Documentation preparation and quality control monitoring
The final phase is concerned with the quality of the construction through documentation, testing, and inspections.

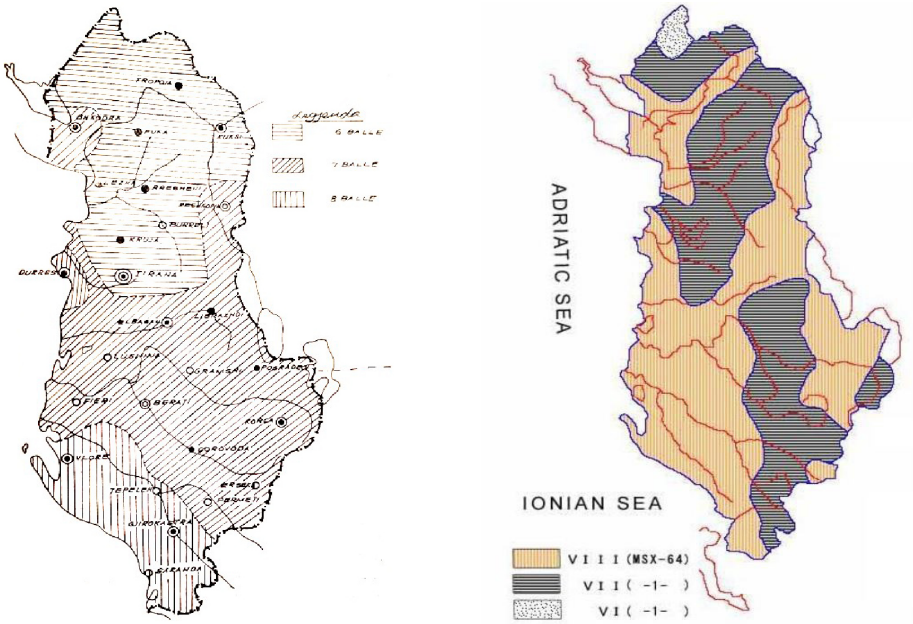


Fig 1a) Seismic zoning according to Intensity in 1963 and 1978 b) Seismic zoning according to Intensity used since 1989 (source: IGJEUM)

The designer will verify existing conditions and supervise construction.

2. Overview of Facilities

2.1. Design codes

Since the time of communism until the present day, the design regulations in Albania have changed and been updated in response to various demands. In terms of construction and codes, Albania's temporary situation is as follows:

▪ Construction codes before the 1990s

The construction industry was public, centrally regulated, and administered. It was the responsibility of the Ministry of Construction and four international institutes to develop building regulations and design public infrastructure and facilities. Russia proposed the first design code, followed by the KTP (Technical Design Conditions) KTP-52 in 1952, KTP-63 in 1963, KTP 1,2,3,4,5,6,7,8,9 in 1978, and KTP-89 in 1989.

As defined by these protocols, seismic force is as follows:

(Seismic pressure based on KTP 78)

$$S_k = Q_k \times k_E \times \beta \times m_k$$

(Seismic pressure based on KTP-N2-89)

$$E_{ki} = K_E \times K_r \times \gamma \times \beta_i \times \eta_{ki} \times Q_k$$

Each of the parameters presented in the preceding formula is determined by four primary factors:

The classification of property, according to national standards (KTP), is divided into three categories.

Category I (strengthened)

Category II (moderate)

c. Classification III (thin deposits)

2. Earthquake intensity based on MSK-64, which can be found on maps provided by seismology institutions based on two different time periods: the 1963 map and the 1978 map. Based on these maps, Albania is divided into regions of 6, 7, 8, and 9 intensity.

The significance of an object based on its function. KTP categorizes the facilities into five distinct groups.

Number of storeys

▪ Building regulations following the 1990s

From 1989 to the 2000s, neither state control nor building regulations were enforced in Albania, despite the construction industry's significant growth. In 2001, the Ministry of Foreign Affairs organized a symposium on the significance of Eurocodes in the construction industry. Following the workshop, a group of engineers was formed to translate and modify Eurocodes to national guidelines over the course of several years. In conjunction with the task, these protocols served only as blueprints and not as specialist-specific instructions. The Albanian government did not authorize the untranslated version of Eurocode 8 until after the earthquake of November 26, 2019.

Based on Eurocode 8, the following information is utilized for the seismic design of the structure:

1. Peak ground acceleration (PGA) maps, which display acceleration values in g. The Lezha PGA map is depicted in figure 2:

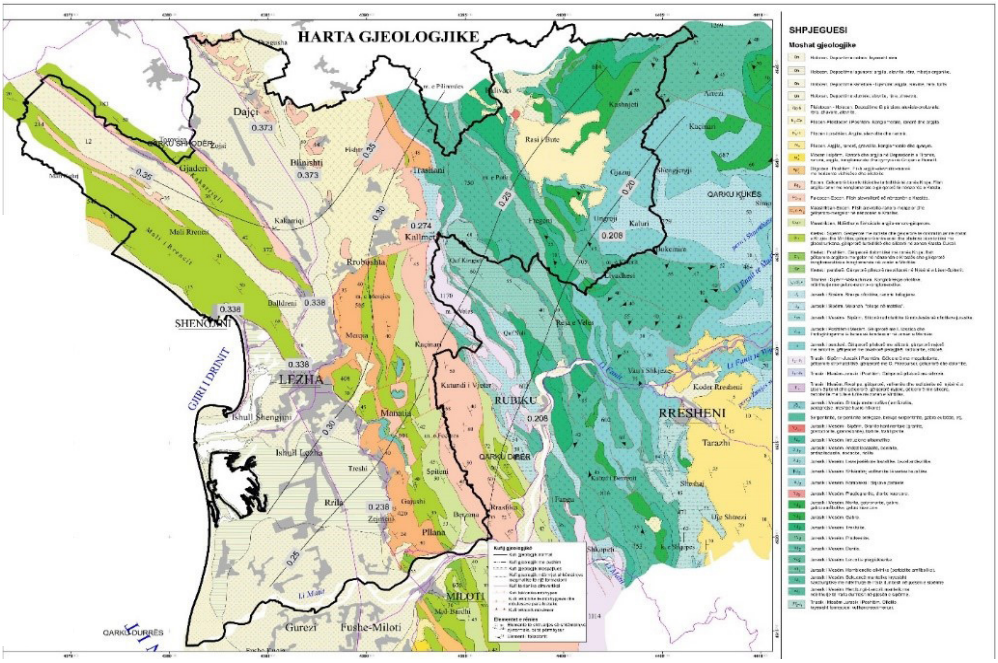


Fig 2. Map of maximum acceleration in Lezha municipality (source: CoPlan)

The land category determined by the values of Vs, NSPT, and Cu is as follows:
a. Category of soil A b. Category of soil B c. Category of soil C d. Category of soil D
e. Soil type E p. Special soil types S1 and S2
Figure 3 depicts the distribution of land categories within the municipality of Lezha.

We extract the elastic response spectrum and then the design spectrum based on the obtained data. The response spectrum is crucial for determining how a system with one degree of freedom responds to seismic action.

2.1. Structural typologies
2.2.1. Classification of types of structures according to their construction period:
From 1945 to the present day, various structural typologies have been utilized in Albania and, consequently, in Lezha, as can be summarized as follows:
During the period between 1945 and 1960, many low-rise buildings were constructed with masonry construction. Few structures were constructed with other materials, such as concrete, steel, or wood.

2. From 1960 to 1979, as a result of seismic activity, a number of modifications were made to masonry structures: the quality of materials improved significantly, and new structural elements, such as reinforced concrete belts, architraves in windows and doors, and prefabricated and ceramic slabs, were added. Prefabricated structures were introduced as a building type for industrial and residential structures.
From 1979 to 1990, additional enhancements were made to increase the structure's resistance to seismic force. At the corners and intersections of the walls, reinforced iron columns were added and the connections were improved. Each column was secured with anti-seismic cables. In addition to the use of masonry structures, the use of prefabricated buildings persisted. During this time, the first reinforced concrete structure of significant height was constructed in Tirana, a 15-story hotel that continues to operate today.
From the 1990s to the 2000s, a new construction period is introduced, referring to the structural typology used for low and tall buildings. During this time period, reinforced concrete was widely used and masonry construction ceased.
5. With the introduction of the Eurocodes in the year 2000, significant developments were made in relation to the structure's typology, which were centered on the classification provided by this code: reinforced concrete buildings (frames, shear walls, core system), steel buildings, wood and composite buildings.

2.2.2 Classification of typologies in accordance with the structural system and placement
In order to determine a facility's response to a hazardous event, it is crucial that the facilities are accurately classified according to their structural types. For the case of Lezha, the map below and Table 1 summarize the typologies and their

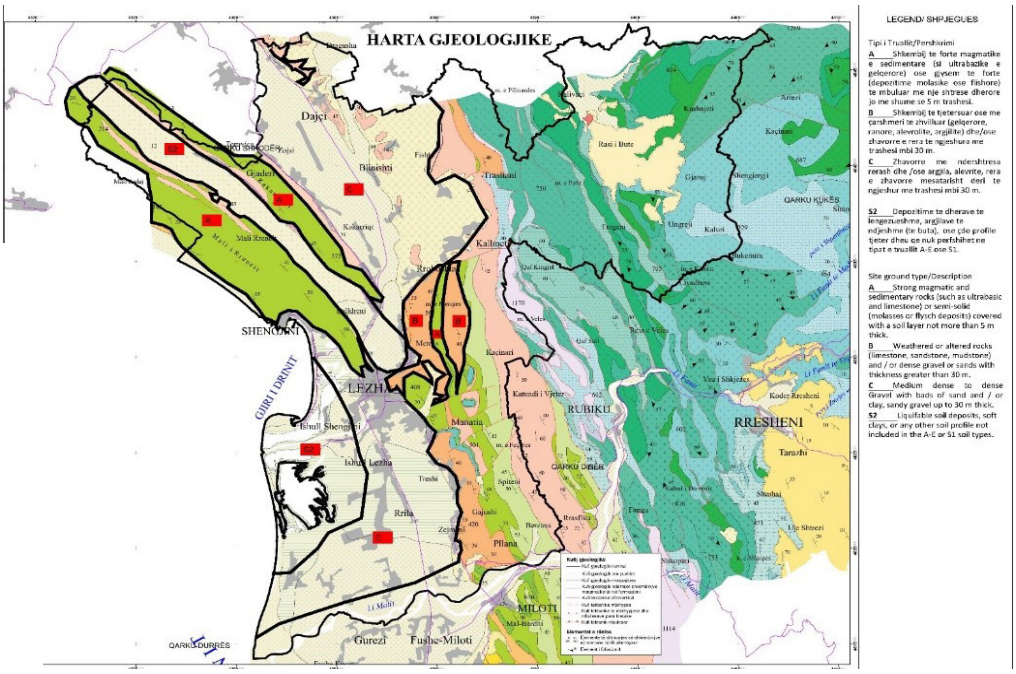


Fig. 3. Land classification map based on EN-1998 of Lezha municipality (source: CoPlan)

distribution in the territory.
Risk typologies

For each of the preceding types, a damage analysis will be conducted for the four primary actions:
1. deterioration due to age and environmental conditions

2. damage caused by human activities

3. damages caused by foundation subsidence

4. harm caused by seismic activity

2.3. Buildings made of unreinforced and reinforced masonry

5. deterioration owing to age and environmental conditions
Numerous damages result from an object's exposure to atmospheric agents, which can be enumerated as follows:
Damage from material deterioration Carbonation and sulfate deterioration Erosion Freeze-thaw deterioration Strain effects:

a. Damage caused by human action
After the 1990s, residents made modifications to all of these structures in order to obtain more space in their dwellings. The interventions have altered the efficacy of these objects, leading to an increase in their potential for injury. Over existing levels, interventions can be classified as vertical or horizontal extensions. The water deposits on the terraces and the use of the veranda for a variety of purposes are defining characteristics of this typology.
b. Damage caused by foundation settlement
This foundation type consists of concrete or stone beam foundations that are susceptible to subsidence due to their own weight and soil conditions. The region of Lezha is primarily comprised of deposits of unstable soils, which explains why some structures have experienced differential subsidence, resulting in fractures in the masonry.
c. Damage caused by earthquakes
Lezha, like the rest of Albania, is vulnerable to earthquakes with PGA values between 0.25g and 0.37g. The effects of an earthquake on this form of structure can be divided into two categories:
Wall damage caused by forces acting on the wall's own plane
Wall damage caused by transverse forces acting outside the wall's plane

2.4 Prefabricated and industrial frame structures

Although prefabricated buildings are prevalent in Albania, as noted in the classification based on construction period, the majority of prefabricated structures in Lezha are located on Frang Bardhi Street. The technology involves

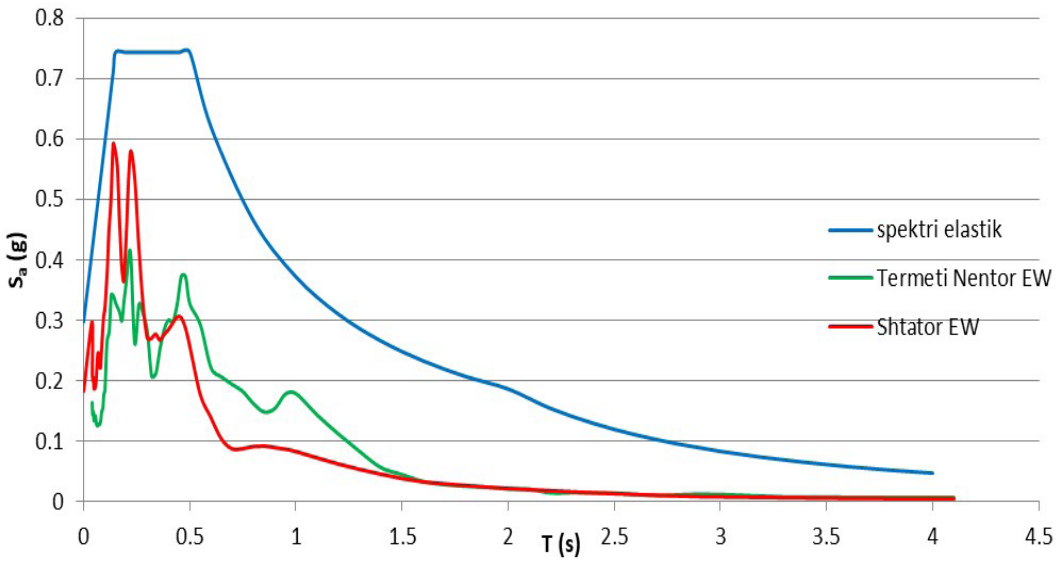


Fig. 4 Examples of response spectrum based on EN-1998 (source: EN-1998)

riveting together prefabricated panels and utilizing other prefabricated elements such as beams and slabs.

These objects are susceptible to deterioration and damage to these structural elements, which can be categorized into two large groups: a) structural, when the damage (fissures) are in the wall panels and/or slabs and/or in the connection of, and b) non-structural, such as cracks in the stucco. In this study, technical recommendations are provided for the decision-making bodies regarding the management of the seismic risk posed by analogous earthquakes to these structures.

2.5. Reinforced concrete structure

The type of reinforced system closely correlates with the severity of damage to these structures. In framed systems, for instance, the orientation of the frame is the primary determinant of damage to joints and partition walls (column orientation); in dual systems or walled systems, incorrect distribution of shear walls can cause connection issues. with twisting that can compromise the structural stability of the building. Concerning deterioration due to atmospheric actions, this type has the following issues:

- Erosion can damage the protective layer of concrete, exposing the reinforcement and making it susceptible to erosion (corrosion).
- Degradation from the freezing-thawing process
- Carbonization – sulfate degradation.

3. Evidence of possible risks for social and cultural objects

3.1. Objects of special importance (school, stadium, hospital)

This category includes objects of special importance for the city which must be designed taking special cases into consideration.

The first category is the schools and in Lezha there are a total of 59 primary schools, 13 secondary schools (gymnasium) and 1 vocational school.

The second category is hospitals and health centers, in Lezha there are 3 hospitals with 319 beds and 92 health centers.

Lezha is a municipality that has a large number of monuments with historical value that must be preserved, which are: Shna Ndou, Saint Barbull church, Saint Mhill, Saint Eufemi church, etc. Lezha castle, Shkina bridge, Gjergj Fishta's house, etc.

4. Possible interventions to reduce the seismic risk

The final phase is that of reducing the risk placed in these buildings. This can be done based on several criteria that include the level of damage, structural typology, etc.

Improving seismic performance includes:

Less damage
Greater rigidity
Increased bending capacity
Increase in ductility
Increased towing capacity
Increase in cutting capacity

In the case of masonry constructions, seismic retrofit can be done in two methods explained below:


Fig. 5 Examples of structures from 1945 to 1960 in the municipality of Lezhë


Fig. 6 Examples of structures from 1960 to 1979 in the municipality of Lezhë

1.Seismic masonry retrofit with "traditional" techniques include in-plane and out-of-plane interventions, in-plane cuts and perimeter reinforcement methods using the following techniques:

Injection of mortar or resin through gaps in the wall
Improvement of wall anchoring
Plaster reinforced with steel mesh
Reinforcement with concrete bands
Repair of local cracks in masonry
Placement of metal braces
Placement of metal rods and plates
Three dimensional connecting system
Use of secondary frames, etc

2. Seismic retrofit of masonry with "modern" techniques
Fiber Reinforcing Polymer (FRP)
Textile reinforced mortar (TRM)
▪ GFRP; CFRP; AFRP
For reinforced concrete constructions, the retrofit techniques used are as follows:
Steel band shirt
Composite fibers
Metal diagonals
Adding walls to cuts
Concrete diaphragm
Improving the connection between the walls and the horizontal diaphragm
Fiber Reinforcing Polymer (FRP)
Intervention techniques can be considered as break-rebuild intervention using these principles:
minimal intervention
wall protection
use of identical substitute materials
additions designed to be consistent with the style of the original building

5. Conclusions and Recommendations.
Due to the fact that the performance of each structure under the action of the earthquake varies, it is necessary to carefully examine the performance of each building using the appropriate methodology, and depending on the results, appropriate reinforcement measures should be considered when necessary. To achieve this, it is necessary to classify structures based on a variety of factors, such as construction time, material quality, and structural system. In addition to classification, maps that display PGA values and geological configuration are also crucial. Based on the methodology described at the outset of this document, the purpose of this report was to provide an overview of the collapse mechanism by analyzing the structural system. The evaluation was based solely on visual inspections, including a thorough examination of photographs and site visits.
Theoretically, several techniques for improving the seismic performance of various structural systems are presented. In the case of Lezha described in chapter 4, some of the techniques mentioned were utilized. Using the technologies described in this report, some of these structures

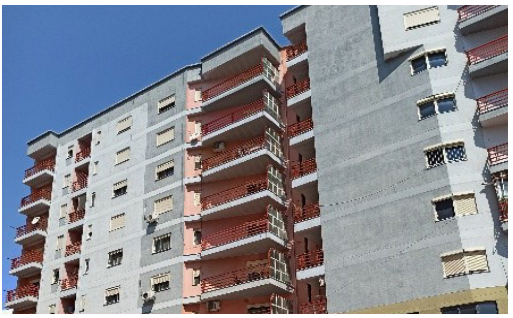
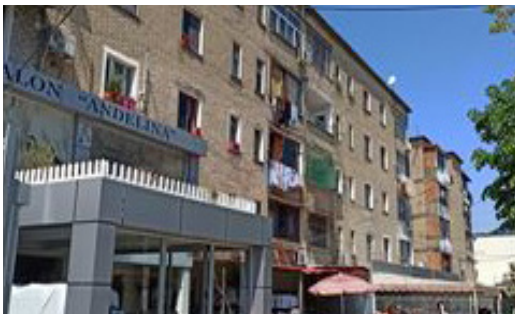


Fig. 9 Examples of structures after the year 2000 in Lezhë municipality



Nr | Typology of the structural system

1. Existing structures with unreinforced masonry

   -"Convenant" area
   -"Collection" area
   Between Kosova Street and Gjergj Fishta Boulevard
   Along the "Mother Teresa" Boulevard in Shengjin.

2. Existing masonry structures with unreinforced with anti-seismic bands and columns

   -"Convenant" area
   -"Collection" area

   Between Kosova Street and Gjergj Fishta Boulevard

   Along the "Mother Teresa" Boulevard in Shengjin.

3. Prefab buildings

   -Along Frang Bardhi street

4. Buildings with reinforced concrete system
   Building with reinforced concrete structural system:
   -Rama
   -Walls
   -Dual
   -Pendulum included

   The "Beselidhja" area is located on Franz Jozef Strauss Street
   Between "Plazh Center" and "Shengjin Center"

Fig. 7 Examples of structures from 1979 to 1990 in the municipality of Lezhë

Fig. 8 Examples of structures from 1990 to 2000 in the municipality of Lezhë

were reinforced six months after the earthquake. On the basis of the 2004 New Zealand Building Act's experience, it is necessary to establish a percentage of seismic resistance below which the building is deemed to be affected relative to new construction standards. In New Zealand, this proportion is approximately 34%. Referenced Charleson, A. "...after the destruction caused by the Durres earthquake, Albanian architects must avoid the incompatibility between the rigid external and internal masonry and the flexible reinforced concrete skeleton," which undoubtedly applies to the city of Lezha.

Taking into account the aforementioned conclusions and recommendations, the relevant bodies can implement the following interventions and measures:

The creation of a database containing crucial information about constructions. This database contains information in the form of tables, diagrams, and maps that can provide an overview of the construction dates of buildings. construction and structural typology and existing performance-enhancing interventions.

Employing specialized structural engineers is crucial for the creation of this database.

On the basis of the information in this database and the advanced analysis provided by the methodology at the outset of the report, it is possible to assess the earthquake risk in each building. Thus, a pre-earthquake evaluation can be conducted in lieu of post-earthquake interventions. This risk will be communicated to the decision-makers.

Lezha can use the knowledge provided by New Zealand to determine whether a structure is susceptible to earthquakes or not. The percentage of structures considered to be at risk from earthquakes in a municipality (34 percent in New Zealand) can be determined with precision by municipally employed engineers. This percentage is also significant because it relates closely to the economic aspect. In the case of interventions, a certain amount of time must be allowed for the construction to be improved after obtaining the results. The relevant authority sets the deadline, and if the proprietor fails to comply, the object will be incinerated.

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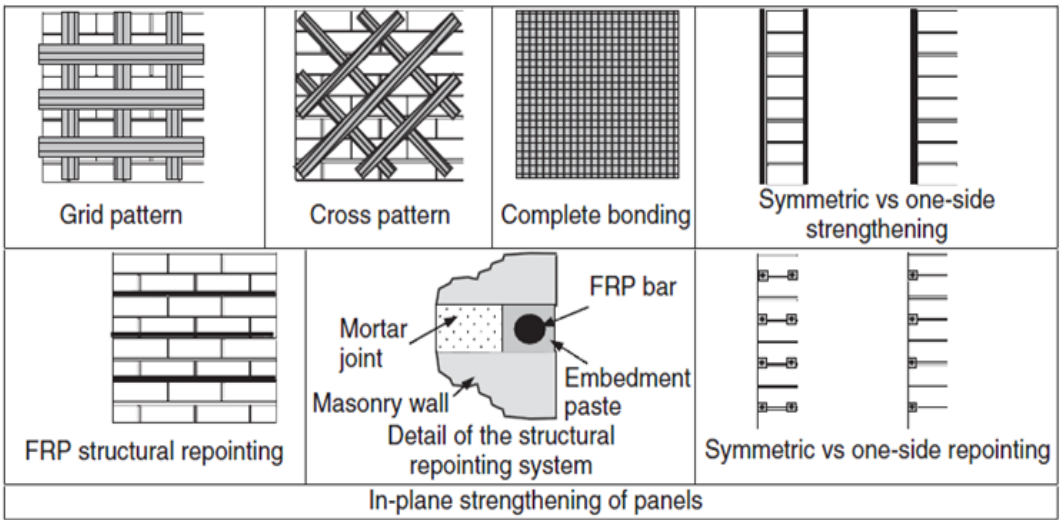
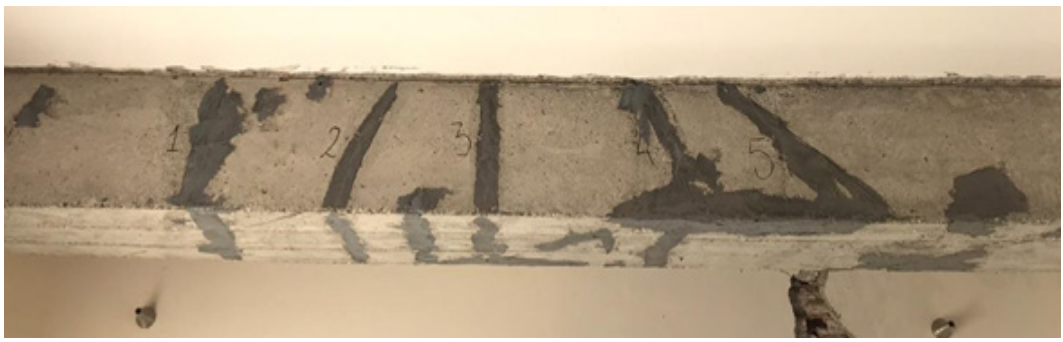
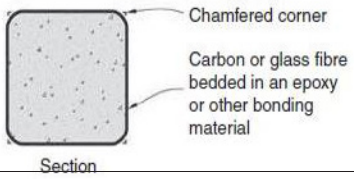


Examples of reinforcement with "modern" techniques for masonry buildings

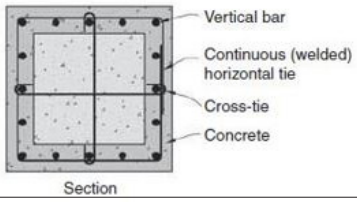


a) Structural damage in the beam b) FRP reinforcement in the beam c) close-up view of the reinforcement d) non-structural damage (partition walls)

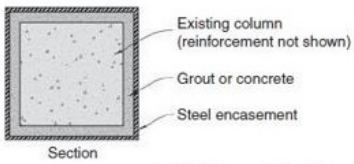
1. Composite fibers



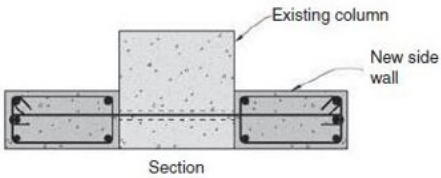
2. Concrete-weapon shirt



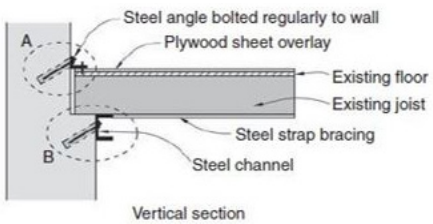
3. Shirt with steel stripes



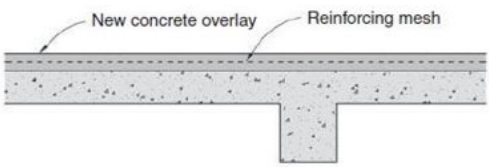
4. Column reinforcement with side walls



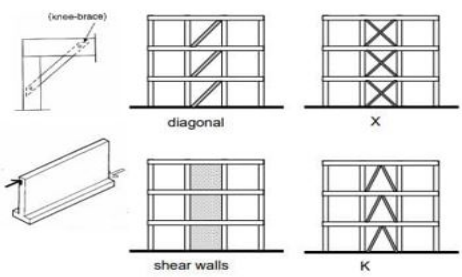
5. Diaphragms in wall joints



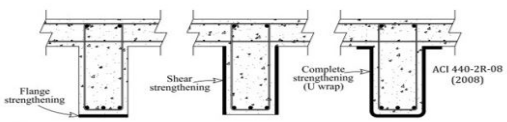
6. New concrete cover



7. Diagonals



8. Fiber Reinforced Polymer (FRP)



Innovative housing models that reflect the needs of contemporary society. (Post-pandemic context)

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Abstract- *This article is concerned with understanding the need for housing in the context of the Covid-19 pandemic and suggesting alternatives to provide solutions for housing in a demanding post-pandemic society and a new lifestyle.*
Since this pandemic hit the world, the issues revealed tackled primarily general societal health, followed by social distancing, change of transportation concepts, and a new remote work model within the housing unit; putting into a tangible discussion, the overall quality of housing.
An emergent need to re-address a new concept for housing, sustaining the actual socio-economic model of living, is frequently being discussed between academics alternating between provision for flexible internal spaces, innovative and resilient houses as well as re-adaptations. In this context of global societal changes, 'The Housing Unit', has been positioned under pressure to meet the extra needs of the inhabitants, like better indoor physical comfort and air quality, natural light and ventilation, wider spaces, and flexible interiors, needs which were previously addressed in the outdoor environment.
Whiles the impact of the pandemic in regard to housing as the primary unit responsible for the overall quality of life imposes researchers and different professionals in design fields to attend to and forecast changes within the housing as the primary "nucleus" driving the general health and quality of life for the citizens; the situation challenged every component of the urban environment, including the uses of public space, public transportation and movement within the city, which already seeks to be redefined.
This research is conducted during a two-week workshop, in the framework of the doctoral program in Architecture and Urban Planning, concerning the context Northern Albanian Region of Lezha, with the participation of the students: Rine Zogiani, Nicola Talamonti, Elena Verzella, Luca Lanzoni, Bianka Madhi,, Armela Lamaj.
The results of the workshop, after a thorough investigation of existing housing typologies, the relation of public spaces with residential buildings, and other aspects like sustainability, through the objective of providing innovative housing solutions. generated variable models of housing in two main directions: a) adaptations of existing housing units; and b) new proposals for contemporary, post-pandemic housing. The proposals integrate the use of near public space and the incorporation of auto-sufficient buildings concepts.

Keywords: *housing, typology, collective spaces, form, morphology, resiliency, sustainability*

1. Pandemics and the urban environment

The cities are living organisms, which are affected by different aspects during the course of history. Natural catastrophes, political systems, and other developments are known to drive the changes in our cities. Pandemics also are considered a major stressor in the health, social and economic aspects, which play a major role in posing various challenges in the life of a city. What is mostly not so evident in the general discussion, is the position of

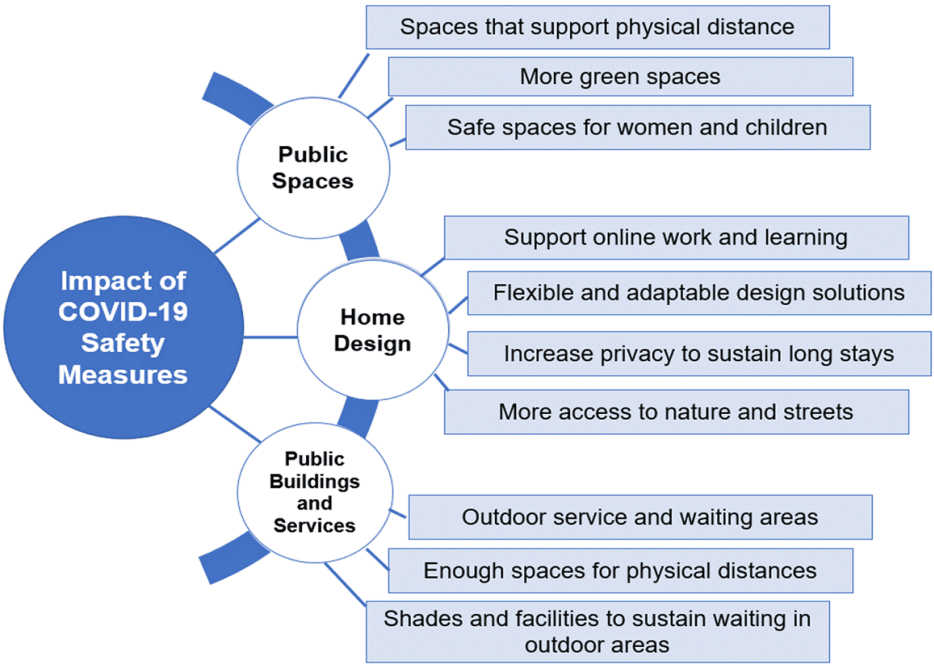


Figure 1: Built environment design response to the safety measures of COVID-19 (Elzein and Elsemary 2022)

architecture as a frontier plane of impact in every aspect of human life. Its attribute of narrowing the gap between the needs of the now and provision for the future is at the prime moment of overall crisis deflected by the emergent needs. It takes a second phase of the crisis, after a reflection space for architects, urban planners, and researchers to have their position displayed towards tackling approaches to assess and meliorate through its tools the urban environment and quality of living.

Throughout history, pandemics have been a generator of urban and new design principles toward better health measures. According to Harris (2006), the Bubonic Plage, known also as the Black Death reconfigured the whole layout of the cities in 14th-century Europe. Following the design interventions recommended by the urban planners, the narrow streets were replaced by wider ones, which followed the positive impact of reduction of population density, better air circulation, and sanitary conditions. The cholera pandemic on the other hand-imposed professionals to achieve solutions for sanitation by constructing the city sewage systems. It was Bazalgette's visions and constructions which aimed to prevent the spread of the disease which defined the main infrastructure of 19th-century London (Gandy, 2016).

During the 20th century, under the pressure of tuberculosis, modernist architects like Alto, Gropius, and Le Corbusier expanded their research and design work, by defining design principles in hospitals or healthcare centers as a result of the tuberculosis pandemic to promote better health and prevent the expansion of the disease. Their professional response towards the architectural principles included the prioritization of direct sunlight, natural ventilation, hygiene standards, and direct contact with nature to promote a healthier environment. At the Paimio Sanatorium of Alvaro Alto in 1929, following its vision for the purpose of this building as a 'medical instrument' these principles, combined with aspects of standardization provided a design that would care not only for the physical needs of the patients but also for their psychological ones, through integrating the natural light, colors, open spaces, and large windows that had access to views through the landscape (Fainstein, 2020).

Covid-19 is the latest pandemic which due to the sophisticated globalized infrastructure has found its way to spread rapidly worldwide, presenting an emergent crisis of health and security and obligating architects and urban planners to mitigate measures in transmission of the virus. The situation would affect the health care facilities, the workplace but mostly our houses, which in contemporary society would have to offer a wider variety of functions for the inhabitants.

Considering possibilities like re-formulation parts of the space and adopting flexibility through moving walls or even designing plain-free spaces, can provide an opportunity for the 'house' to serve many functions in the 'changed post-pandemic society'.

Figure 2: How coronavirus has shaped the home of tomorrow (Source: Financial Times: https://www.ft.com/content/546716b8-bdec-48fd-9f5b-32304de7fcee)

Housing as a reflection of the contemporary , post- pandemic context

Continuing to understand and elaborate on the correlation of architectural design with emergent needs from pandemics, highlights the level of impact that architecture has to influence urbanization, infrastructure, and every aspect of design, related firstly the general public health, establishing resilient environments and exploring strategies to tackle the challenges presented, especially to the housing sector.

According to Elzein and Elsemary (2022), based on Peters and Halleran (2020), the measures for Covid – 19 should tackle the intervention in public space, home design, and public buildings, which would support public health and the indoor life of families.

This scheme was considered as a base framework in the orientation of this research towards the findings and suggestions regarding the specific urban context of Lezha, where the addition of space is considered crucial to fulfilling the new needs, relation with the common space and nearby outdoor one seems to be the two main factors of contribution during the proposal presentations.

Concepts of adaptability and flexibility of interior spaces while integrating enhanced ventilation systems, incorporation of new materials like antimicrobial or antifungal, and reconfiguration of the internal spaces are highly considered during the discourse for housing in the post-pandemic society.

Simultaneously, according to the data from Global Workplace Analytics which concludes that from 2022, 16% of the companies worldwide have shifted to home remote control worldwide, in comparison with the 70% during the covid and 7% before covid, argue the growing relationship of the inhabitants with their house.

It's becoming more and more evident that the attachment of people to their homes is extending not just in the position of basic needs fulfillment, or refuge place in times of crisis, but also a shifting paradigm to a wider sanctuary able to provide the necessary spaces, flexibility, and support to the overall daily activities, including the workspace.

The importance of green spaces, outdoor access, or even terraces or balconies has become a vital factor for the satisfaction of residents according to Akbari et.al (2021), which also indicated that the typology of housing had a significant impact on the inhabitant's mental health and mental health, in favor of the private homes, in regard with the collective apartment buildings. During the pandemic, the balcony, verandas, or courtyards, represented the sole spaces of fresh air, outdoor time, and psychological freedom, which formulated a need for the presence of this kind of space within the house even after Covid. In a context where the relation of the people with their house is reinforced, considering the increment of time spent indoors (ElZein and ElSemary, 2022) during the research it became obvious that in terms of argumentation for the new concept of home, including new houses or interventions in existing ones, the new solution would have to work through

Figure 3: View of Lezha from the Castle (Source: authors)

the factors of a) increasing the quality of common and green areas, b) ecology and self-sufficiency in architecture a c) addressing the attributes of architecture that help to fulfill the necessary criteria of like and work in a post-pandemic situation.

Lezha Region nd Post-Pandemic Context
In Albania, the pandemic took place while the country was still recovering from the earthquake of November 2019. While the vulnerable economy was impacted by the loss of people and significant damages from the earthquake, the housing sector was dealing with onerous challenges, especially in the regions of Durres, Fushe-Kruja, and even Tirana and Lezha.

Lezha Region is located on the North-Western side of Albania. One of the oldest regions, with direct access to the Adriatic Sea and bounded by mountains on the eastern side is considered "home" of archeology, cultural and historical heritage, tourism, and agriculture. The region, and especially the main city "Lezha" location, is impacted by tangible other issues like climate change, floods, periodical forest fires, and high seismic activity, which imposes immediate measures to comprehend the actual needs for housing while taking into consideration the environmental aspects, to offer innovative housing models for the dynamic future.
The pandemic as a crisis leads to opportunities in terms of being proactive when thinking and designing the same way this pandemic exposed the differences and popped up the inequalities reflected also on architecture, society, environment, and economics. The crisis and natural catastrophes should serve as an alert on design and planning in order to avoid or at least manage easier the situations like the last pandemic. Rainfall management, air pollution, humidity, and people and space proportion are some of the main problems yet opportunities and possible approaches in the city of Lezhë according to the post-pandemic situation – based on the site visit and interdisciplinary research.
By using architectural and technical tools, through rethinking the space design through context preconditions, the article aims to generate ideas simultaneously in the flexible embodiment of interior housing as well as through the reconceptualization of the public space, towards more resilient and sustainable buildings.

Methodology and Indicators- The aim of this research was the generation of possible proposals for innovative housing models in the context of Lezha that reflect the needs of contemporary society. Aiming to develop new design paradigms which can combine future urban needs and ambitions, such as densification, the need for enlarged indoor spaces, and the exploitation of tourist potential of the area, with the necessities brought to light by the post-pandemic situation, such as the need of a deep reformulation of the traditional idea of living and both private and collective spaces related to it.

During the research, the methodology chosen can simultaneously be considered multifold. In order to achieve a clear understanding of the impacting factors

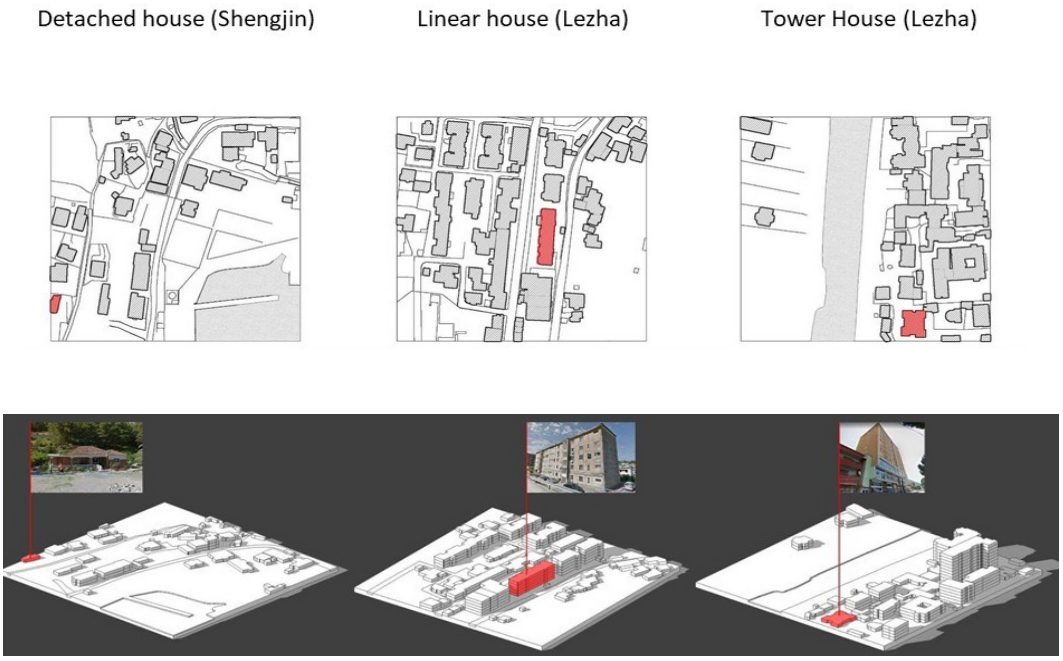


Figure 4: Housing Typologies in Lezha Region (Source: authors)

and the post-covid context in the region, towards defining the goals for housing, the first step in the methodology was a literature review and data linking the pandemic with the housing concept. General analysis of the history of Albania, to have an overview of how political, economic, and social transformations had a direct impact on the housing development.

During the second phase, site analysis and mapping has taken place by group work, to define the spatial and urban needs of the region, with a focus on urban settlements. In the research phase, the definition of areas for investigation, as a sample of 200x200 m2, with the selection criteria for representing 3 different morphologies of terrain and which would contain the presence of the 3 typologies of housing, was considered of primary importance and was followed by 3 steps. Each of the participants further on has developed, according to their field of interest, a specific narrow topic within the workshop to aid the definition of the post-pandemic society and housing.

-the identification of the main representative areas for investigation.

The urban fabric of Lezha has been classified according to the most relevant historical events which determined its morphology over time (before, during, and after communism); afterward, the three most representative 200x200m samples have been identified.

-the analysis of sample areas through specific sets of indicators.

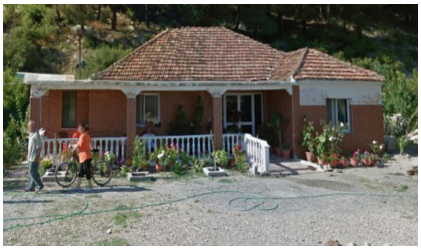
These samples have been investigated according to urban parameters (e.g., aggregation patterns, the relationship between dwellings and public spaces, etc.), morphological and typological aspects (e.g., form, volume, facades, building technologies, etc.), and environmental and sustainability factors (rainwater collection, humidity, air pollution, etc.).

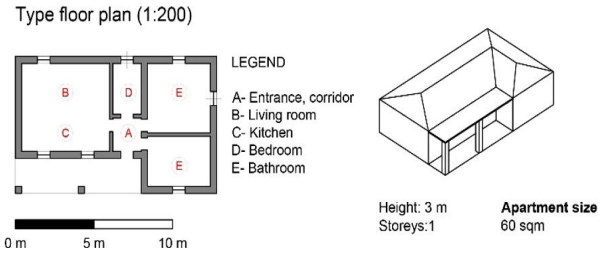
-the development of new housing models.

In light of the data collected in the previous moments, possible intervention strategies for the post-pandemic society have been defined, specifically divided into two main categories: principles for the adaptive reuse of the existing buildings stock and guidelines for the expansion of new residential areas.

From these criteria, three areas were chosen: a) in Shengjin City which consisted mostly of the first housing typology: the detached house, b) in the dense area of Lezha, represented by the linear house and c) nearby the river of Lezha, represented by the 'after dictatorship' – high rise tower. To define these typologies, in particular, three main historical periods have been taken into consideration. In particular, the Communist period (1944-1990) has been considered a fundamental historic phase to subdivide urban development and the housing. A further analysis of housing typologies has been carried out by comparing the vernacular and informal typologies of the region of Lezhe with the ones of the northern regions (Shkoder) and southern regions (Gjirokaster) of Albania. Then, the most representative typologies of housing located in the case study areas have been identified, considering the urban development throughout the

A_The Detached house





B_Linear Housing *(known also as Row Housing)*

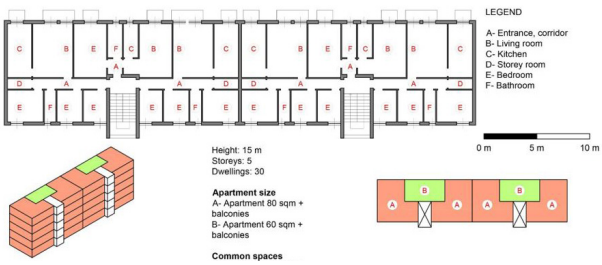


Fig. 5.a_ 1st Typology of Housing_ The Detached House; Fig. 5.b_ 2nd Typology of Housing_ The Linear Housing

history of Albania and the Lezha region.

The Detached house (before WWII), contains only one dwelling unit and is completely separated by open space on all sides from any other structure. The bearing structure consists of stone or masonry walls and the roof structure is made of wood. The greatest part of the detached house stock of linear houses was built on private initiative.
The linear house is a building containing at least three dwelling units per floor, organized horizontally and connected by the stair (Communist period, 1944-1990). The bearing structure consists of a reinforced concrete frame structure or reinforced concrete panel structure and the envelope is made by perforated brickwork. The greatest part of the building stock of linear houses was built on public initiative. Tower house (after 1990) also called an apartment block, the tower house is a building containing more than one dwelling unit, organized vertically. Shops and non-residential features are located from the ground floor to the first or second floor, while the residential ones are located above. In general, the roof is flat and accessible only to allow the maintenance of mechanical building systems installed there. The bearing structure consists of a reinforced concrete frame structure and the envelope is made of perforated brickwork. The greatest part of the building stock of tower houses has been built on private initiative.
The spread of Covid-19 pandemic has been transforming every aspect of life, impacting obviously also the living habits and needs of people all over the world. Taking into consideration the reality of Lezha, the current building stock has to be transformed to respond to new critical issues: the lack of both exterior and interior spaces. As for the first issue, is evident that due to lockdowns people have been forced to stay for a long time at home, private of their vital contact with the outdoor environment and with nature. For this reason, exterior common and private spaces like balconies, terraces, and gardens have been becoming essential amenities for every dwelling.
As the second issue, due to lockdowns, people have been also forced to do homeschooling and work, often in spaces not suitable for these activities for the noisiness or lightning. Consequently, is evident that the layout of the dwelling has to be readapted and expanded, creating separate spaces to host these functions.

Public space design principles towards sustainability, resiliency and autonomy.

The public space, for the purpose of this research in the post-covid context is considered essential to the health and quality of live of the citizens. The public space, reflecting back on its usage during Covid, is now not understood only as an 'open space', contrariwise the smaller open spaces within the apartments, nearby or within the ray of movement in the neighborhood is the one that have raised the main interest, due to a more individual need for using the public space. These aspects are the one which during the research have been considered as the

C_Tower Housing *(known also as High-Rise Apartment Building)*

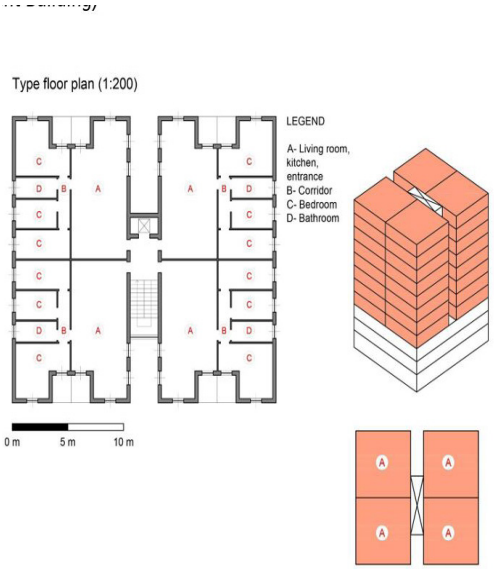


Figure 5.c: 3rd Typology of Housing_ Tower Housing

most relevant in providing the resiliency and autonomy of the neighborhoods.

The levels of analysis, followed by concrete proposals, in the realm of the public space have been extended in 3 levels of analysis. Including In between spaces Taxonomy, Residential Edge Taxonomy, and Ground Floor program analysis.
In between spaces Taxonomy is understood as a result of logic driven by the different historical settlements model, with application in 5 aspects: liminal public area, residual greenery, collective space, private gardens, and closed mono-dimensional edge.
In the proposal generated from the research, solutions for Liminal Public Area, consists of the Implementation of a site-specific designed urban future, which is expected to provide the social effects of promoting social interactions, extra activities like sports, playground, relaxation and improvement of outdoor space as well as the environmental positive effect of integrations and increase of water storage spaces in the build-up areas. In the residual greenery, the intervention proposed is focused on the Enhancement and Implementation of Green Buffers through the reconversion of residual green into new natural areas including community gardens, education gardens, etc. The social effects expected to derive from the intervention include improvement of outdoor space, promotion of social activities, and increase perception of a healthier and more sustainable environment. The principles design for the In-between spaces regarding Collective Spaces is proposed as a process of Enhancement of the collective space with green features and extra activities such as rain gardens, water squares, permeable. While regarding the 4rth component of Private Gardens, its actual increased value is intended to be achieved by the enhancement of natural elements and reconceptualization of existing landscape morphology.
The closed mono-dimensional edge is intended for the actualization of the facades with the character of a semi-open indoor thick edge, semi-open outdoor thick edge, and permeable thick edge which will act like the buffer zone within indoor-outdoor spaces with its evident expectation of environmental and social effects.

Environmental assessment as an integral part of the urban and architectonic resiliency

Lezha is a Region that is suffering its share in the context of climate changes, floods, pollution, humidity, fire in the woods, and seismic activities while impacting the financial and social aspects.
These issues need to be attended to in the prompting attempt to define the new vision for housing in a challenging moment. These aspects need to be taken into consideration, and integrated within the city and in the housing unit, in order to achieve the needed resiliency and sustainability, aiming toward the auto-sufficient house and the overall resiliency of the city.
Starting maybe partially, by collecting the rainwater and using it for other

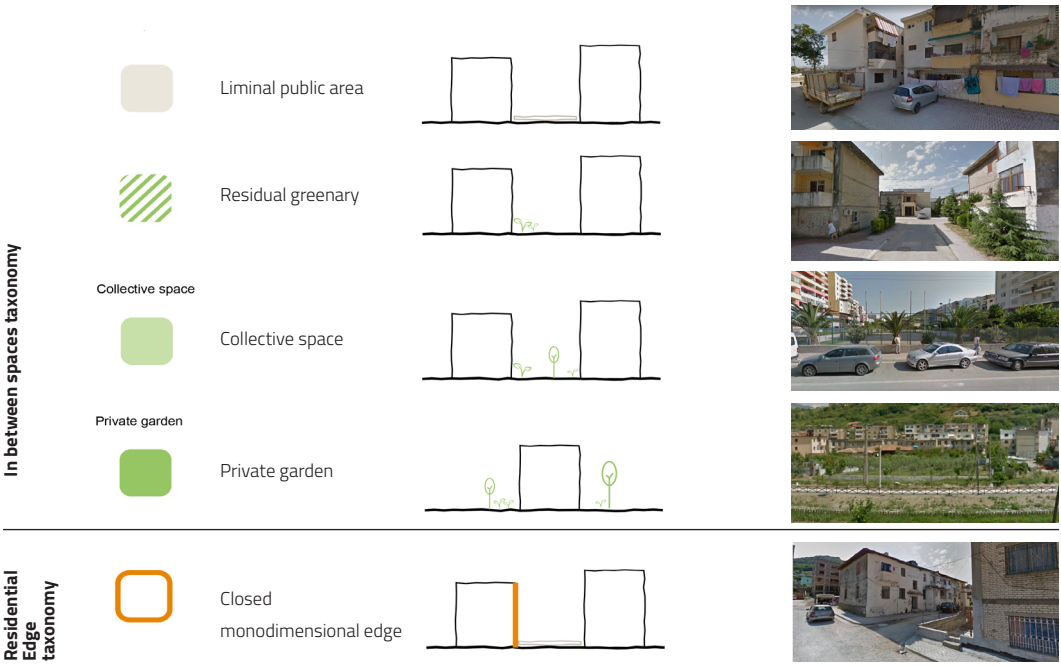


Figure 6: Public spaces identified. (Source: Ph.D. Candidate Elena Verzella)

purposes, adding Bio-materials and new solutions for ventilation that contribute to air quality, proposing new materials for reducing the possibility to develop micro-bio contamination, increasing the dimension of the space or creating flexible spaces that can be used for different purposes etc. could give a contribution on being proactive regarding crisis such the last pandemic – for public spaces and also housing, offices, flexible buildings and all the possible concepts of future regarding post pandemic indoor and outdoor spaces.

Also, During the past few decades, the increased link between various symptoms and illnesses to nonindustrial indoor environments has been discussed seriously regarding the general health of population. Different scholars have cautiously addressed the issues of indoor air quality and construction materials, which in the context of post-covid, during this workshop has been brought into attention, to be integrated in the proposals for the 'House of the Post-Pandemic era'. The sick-building syndrome, possibly converted in a bigger danger in a home where, remote working, and the greater crowding of living spaces, which is widely treated by the candidate Luca Lanzonie in his article, consists on the starting points to consider certain interventions, like inclusion of the 4 systems below which would also positively enhance the sustainability and resiliency and sustainability of housing.
General Recommendations, towards these objectives, after the workshop analysis and literature research include the applications of: a) Technical Systems for Rainwater Management, b) Solutions related to humidit, c) Use of Solar Panels, d) New Materials.

Housing Models, as Solutions for Post-Pandemic Lezha

After the overview of new living needs imposed by the Covid-19 pandemic, the main challenge regarding housing is finding ways to redefine the house design, use, and space to serve the needs of contemporary society, while taking appropriate measures to professionally orient new design, when requested.
In light of the data collected in the research, possible intervention strategies for the post-pandemic society have been defined, specifically divided into two main categories: strategies and principles for the adaptive reuse and renovation of the existing buildings stock and guidelines for the expansion of new residential areas.

4.1 Re-adaptation and Intervention Strategy on existing typologies

After this overview of new living needs imposed by Covid-19 pandemic, strategies of renovation and readaptation of the Lezha building stock have been proposed to define Resilient adaptations of housing units.
The three typologies, evidenced through the site visit process, are treated with different methodologies, like space or floor extension or subdivisions, subtractions, additions, fusion, densification, to achieve with minimal interventions in the existing structure, the objective reaching of providing additional space, common space and flexibility, by also keeping in focus the ventilation, greenery etc.

Figure 7: Proposals for the Buildings Systems. (Source: Authors)

These interventions are described in more detail in the article of the Ph.D. Candidate Nicola Talamonti.

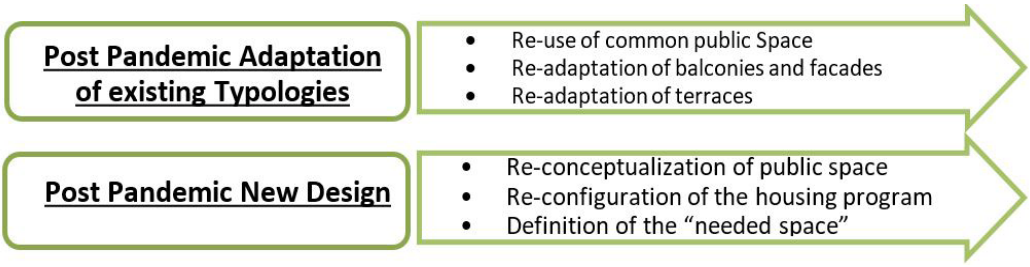
Detached house (known also as the individual house) - The open green space on all sides from any other nearby structure is the strength of this housing typology. The need for exterior green spaces is already satisfied. The strategy to respond to the need of having additional interior spaces consists in a vertical expansion of the building, maintaining the same building footprint and increasing the number of floors above the ground (from the only one floor to two floors). In this way, the size of exterior green spaces is not compromised and the consumption of soil is avoided.

Linear house (known also as Row Housing) - Critical points of this house typology are the lack of exterior green spaces, few interior common spaces, few cross ventilations for each apartment, the size of the dwellings and their configuration. For these reasons, the intervention consists in the reconfiguration of the layout each floor by reducing the number of dwellings, using the resultant space of this reduction to create common areas at each floor and to expand the size of the dwellings maintained. Moreover, in an added structure, connected with the stair and lift core, are located common external and green spaces, at each floor. At the same time, to keep the same number of dwellings preceding the intervention, an addiction of two floors, with the new layout above mentioned, has been proposed.

Tower house (known also as High-Rise Apartment Building) - Critical points of this house typology are the lack of exterior green spaces and the few cross ventilation for each dwelling. For these reasons, the intervention consists in the reconfiguration of the layout each floor by filling the voids between each building bock and using this resultant space to expand the size of each dwelling and to insert a double chimney to enhance the natural ventilation. Moreover, the flat roof is transformed from a technical space to a common green space.

4.2 New Housing Proposals

The discussion for the New Housing conceptualization, during the workshop was extended in the comprehension of the pandemic effects and the role that architecture should play in the globalized city of the 21st century. While accepting the changes that the housing concept has derived during the course of history, through the need for thinking about the New Housing in the post-pandemic world, the necessity for taking in consideration both inside or outside components has become crucial. From the indoor climate and interventions, to the re-conceptualization of the public space within the neighborhood seems to have taken an essential importance on the value and usage of our homes. The alternatives provided were merged from the emergent need to define the new "public space, common ones and the interior spaces". Inspired from the conglomerate concepts which surfaced during the research, it became obvious that now the "House" was not only a "cell" in the spatial planning



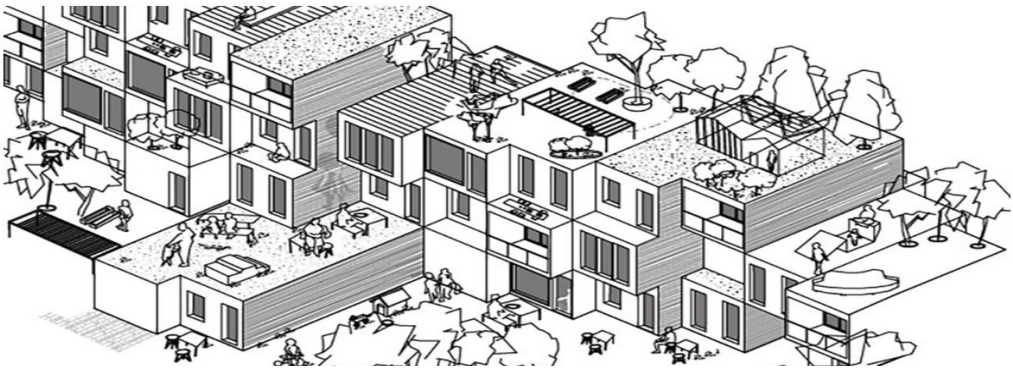


Figure 8:Alternatives for Housing, Post-Covid Area. (Source: https://m.an239.com/mea/)

processes but an organism to be defined especially in relation with the border spaces and neighborhood.
During and after the pandemic the home became the epicenter for many people. Everything happened at home—work, school, exercise, play and everything in between. Families' priorities and needs have changed in many ways, and how they use their homes tops the list. An emerging priority among homeowners is health and wellness. Not only do they want their homes to protect their health with great indoor air quality, they want adequate space to attend to their own wellness at home. Furthermore, homeowners now realize their homes must fill many roles. No longer are homes mainly a place to gather and rest, but they must also serve as schools, offices with dedicated workspaces, gyms, outdoor living and many other spaces. For this are suggested more segmented approaches than open floor plans.

Taking into consideration also the important aspects of the Strategy for Development and the Regulatory Urban Plan of Lezha, which identifies the 'Densification of the existing urban areas by Urban Infilling', these two main concepts were researched, conceptualized and proposed in the three sample areas of the study.
In these three samples, which also contains a different territory, landscape and also contains the three existing typologies of Housing, generated in the chapters above, were proposed three different suggestions for buildings, referenced to innovative recent projects, with similar characteristics and needs as Lezha.

After the selection of the samples, the criteria's for proposing the new housing typologies in Lezha were defined by: a) the average heigh of buildings on the sample, b) type of terrain, c) presence of a natural resource (like the river) and the d) special needs of the site, like: micro-climate, need for greenery extension, natural ventilation etc.

Each of this component has been identified to be able to provide the necessary up-do-date proposal of housing, fitting the needs of the area.
The references provided by in the workshop, which were further on explained in another article by the Ph.D. Candidate Bjanka Madhi, have included the following scenarios:

- The first scenario is referred to the "Linear typology " in flat terrain;
- The second scenario is referred to the "Box massing typology " in a slightly sloping ground near a hill;
- The third scenario is referred to the "Unit house typology " in very sloping ground.

Each of the scenarios provide the concept of modular volumes which interacting with each other or with the landscape configures a new architectural landscape itself, accompanying a conglomerate of spaces in between, to offer a variable open space which can satisfy the needs of the new post-pandemic society.
Natural ventilation is an important aspect of this modular combination,

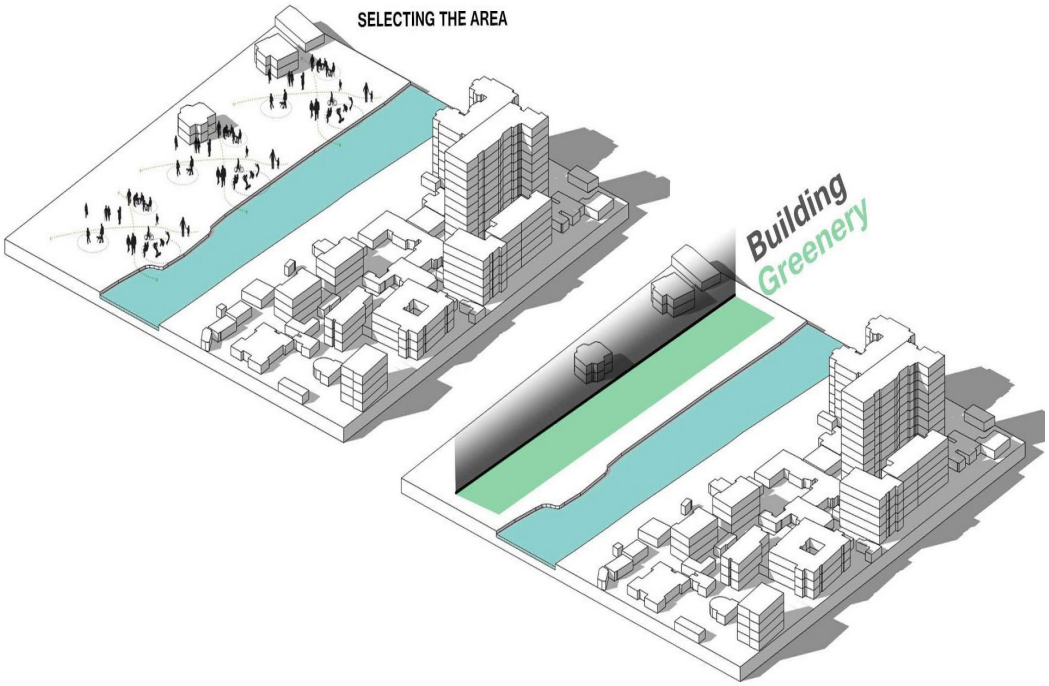


Figure 8: Sample Units Characteristics and Interaction with the landscape and the city (Source: Authors)

made possible by the openness of the facades and the differences in height. Natural ventilation can be understood in two dimensions: inter-structural for the building and interior for the home as a unit. The compositions offer a new dialogue with the terrain as well as predicting the opportunities to define indoor open spaces, like terraces or balconies.
One of the features of the modules are the composition of different patterns by the process of repetition which makes these options more flexible and authentic when positioned in different terrains.
The complexity that their patterns can provide, play also the necessary role towards organizing the interiors of the homes as wider interior spaces, flexible which include the wider living area, combined with working, sport and recreational area.

Conclusions- This research intended to understanding the needs of housing in the context of Covid-19 pandemic in the context of Lezha Region and suggesting alternatives to provide solutions for housing in a demanding post-pandemic society and a new lifestyle.
During the research, the general framework of tackling the problematics in Lezha Region has initiated like a necessity of new housing paradigms, but within the configuration of today's social needs, the new environmental challenges presented, which are considered the crucial targets to be tackled in the path of reformulating the conventional concept of housing and relationship between the public space and dwellings. These ambitions are addressed during the workshop through different interventions. The first step by defining the public space and using it as a tool to enhance the environmental quality, outdoor and indoor life, while the second step has managed to offer alternatives for the existent housing structures and typologies and through proposing new typologies, based on the latest studies and alternatives provided in post-covid context.

The Urban structure of Lezha, according to the most important historical events that determined its morphology over time (urban parameters, morphological and typological aspects, environmental factors and sustainability) which derived propositions in the 5 aspects of the in-between spaces: liminal public area, residual greenery, collective space, private gardens and closed mono-dimensional edge.

a) Design principles for the spaces in-between buildings, the propositions tackled the implementation of: a) Urban furniture (benches, children's games, urban shading elements, etc.), b) Green corridors (natural green surfaces, community and educational gardens, etc.), c) Expanding the collective space with green elements and activities and d) Reconceptualization of the existing morphology of the landscape (increase of greenery, touchable surfaces, small hills)
b) General Propositions regarding the environmental interventions towards these objectives, include: a) Technical Systems for Rainwater Management, b)

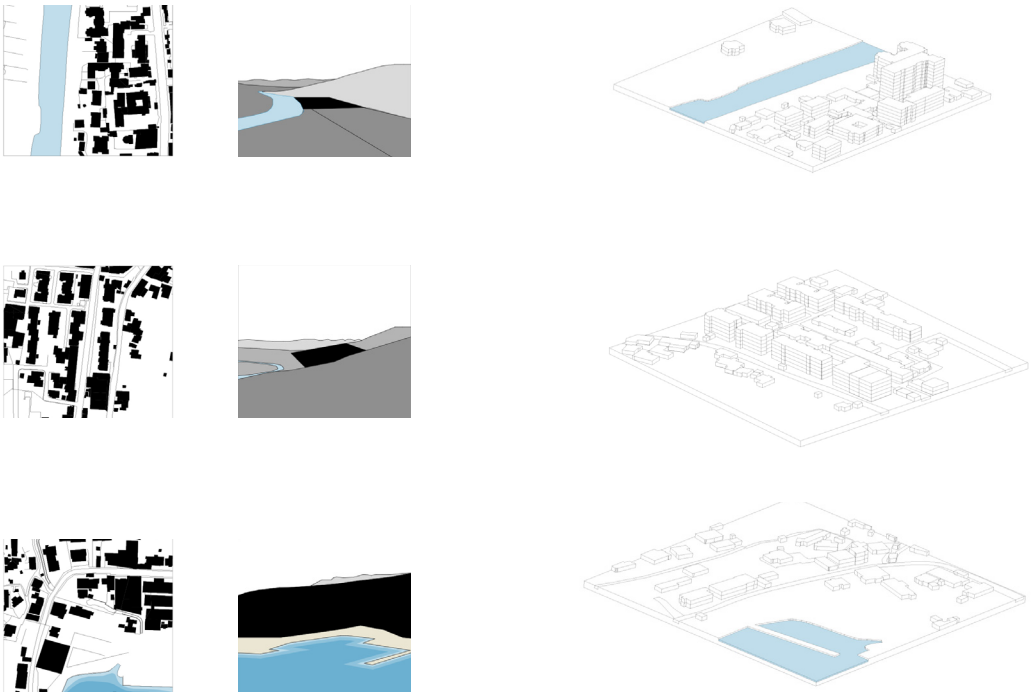


Figure 8: Sample Units Characteristics and Interaction with the landscape and the city (Source: Authors)

Solutions related to humidity, c) Use of Solar Panels, d) New Materials.

These aspects are intended to improve the existing situation, in the urban level, following the application of these components in the settlement unit.
A wider observation of the complexity of architecture in post-pandemic housing has been undertaken, towards a new paradigm for housing solutions based on; the flexibility of spaces, self-sufficiency, design, and architectural interventions to meet the needs of changing society, and the specific requirements of the city of Lezha in housing. During the research it has become obvious that the post-The Post-Covid Experience In the interior of the house, Flexibility and Customization of Space has the main focus, while Adaptation of Materials, inclusion of spaces like working, recreational, relaxation or sports are now on considered essential part of a home interior.
Based on the data generated on the preliminary work on site and on urban settlements, possible intervention strategies for the city of Lezha after the pandemic have been determined, specifically divided into two main categories:
- principles for adaptive reuse of existing building stock
- instructions for the expansion of new residential areas (densification, integration with space)

These two approaches are provided as a wide system of elements, including for the first alternative of re-adaptation: the re-use of common public space, re-adaptation of balconies and facades, re-adaptation of terraces as well as finding ways to generate new indoor common spaces.
In the second approach, where new typologies of housing are proposed, along with the re-conceptualization of public space, the definition of new spaces have also taken place, according to today's needs of the society and the re-configuration of the housing program. The alternatives, provided for the context of Lezha, are sustained in well elaborated case studies which not only share these necessities, but also engage the space, according to the territory, interactive public space and integration of new needed spaces within the contemporary house.

As the world is striving to reform several aspects of the society, architecture of housing has emerged as a crucial domain for exploration and innovation. During the workshop, the analyzation process and the innovative complex propositions provided in this article and further on detailed in each participant article, has tackled the innovative architectural approaches to address the challenges posed by the post-pandemic era. By examining key aspects like spatial configuration, public space, health and safety considerations, sustainability, technology integrated systems and interior design, the proposals aim to address the emergent needs for re-configurating the public space in the same system with the indoor space, as the road towards the future of housing architecture.

The framework of this workshop, can sustain a further elaborated methodology to be implemented in various cities with resemblances in size, context, territory or similar housing typologies in Albania.

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3
Proposals for planning and settlement models.

Human Centered Design to enhance inclusive tourism by improving elderly mobility in the post pandemic era.

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Abstract- T*his contribution aims to analyse the current situation of Lezha region to propose possible intervention opportunities to enhance local and not local tourism. Starting with the current trend of ageing society and its relative tourism consequences and following with the mobility infrastructures analysis, then the most important key areas of intervention of Lezha region are presented: Cultural heritage, Naturalistic areas, seaside and mountain tourism. Finally, a new approach called Human Centered Design (HCD) approach is presented as possible tool to lead the transformation from a mobility car-centred system to a multi modal mobility system. Aim of this approach is to rethink the entire mobility to be more inclusive, by enlarging the possible cohort of users, and consequently to make tourism more accessible especially for frail people like elderly.*

Keywords: HCD – elderly mobility – elderly tourism – smart mobility

Introduction- Ageing world and Tourism-
All over the world, people today manage to live longer than in previous years. In fact, nowadays the vast majority of the people can reach their sixties and beyond and it is possible to affirm that any part of the world is experiencing growth in both the size and the proportion of older persons in the population. According to WHO, by 2030, 1 in 6 people in the world will be aged 60 years or over and by 2050, the same elderly population will double reaching a forecasted estimation of 2.1 billion (Ageing and health, 2022).This is mainly due to several factors: the aging of the baby boomer generation; the extended longevity, the decreased birth rate as well as a period of relative peace all over the world (Fatima and Moridpour, 2019).
The ageing world trend is influencing several fields and tourism is surely one of them. This is proved by the steady increasing percentage of elderly tourists, who already make up a significant segment of the hospitality and tourism market (Bai et al., 2001, Lohmann and Danielsson, 2001, Schröder and Widmann, 2007).
Furthermore, the tourism industry has recognized this market potential for a number of years, and tourism policy makers as well as industry practitioners have been focusing on developing competitive business and marketing strategies to target elderly tourists (Bai et al., 2001, Sedgley et al., 2011).
Regarding the Albanian situation, the country has already started to experience the effect of ageing population.Especially in the last two decades, the average age has been risen for both the elderly increase together with the reduction of children and young adults (INSTAT, 2015).
Nevertheless, while a great development on tourism is happening, especially in the seaside of the country, not so much has been done to accommodate needs and

necessity of elderly and in particular of elderly tourism.

This contribution illustrates the strategic economy resources of Lezha region and proposing several guidelines to enhance tourism considering an inclusive approach towards elderly mobility and tourism.

Lezha region morphology and strategic infrastructures

Lezhë County is one of the 12 counties of Albania situated in the northern region of Albania. It is characterized by 479 km2, 65.633 inhabitants, and it is divided in three districts, Kurbin, Lezhe and Mirdite, 5 municipalities and 16 communes.

The morphology of the territory is characterized by several landscapes such as the Mirdita highlands in the northeast area, the seaside beaches such as Rana hedhun, Shëngjin and Kune beach along the coast as well as plan areas such as the Zadrima plane and the Kune-Vain-Tale lagoons.

Together with its morphological reality, Lezha presents several strategic areas regarding Cultural Heritage such as the national Scanderbeg Memorial, the national museum of Albania and the Lezha castle.

Furthermore, as a County, Lezha has a strategic position because it represents an important junction of national and international mobility: to the east Shëngjin is only 240 km far from Bari (IT); to the north it is only 97 km from Podgorica (MN); to the west it is 225 km from Pristina (XZ) and to 300 km from Skopje (MC); to the south it is only 64 km from Tirana (AL).

Mobility development

Considering all these aspects and the high potential that Lezha region has for the tourism all the economic development of the region has been calibrated to increase the amount of hospitality facilities together with the extension of the rural and urban roads.

According to the Regional development plan (UNDP Albania 2005) several initiatives were proposed in order to facilitate the economy mainly related to tourism. In particular, several new road connections to the seaside area were proposed such as two new highway (Zejmen-Skenkoll, Laç-Patok,) a new connection between the airport of Gjader and the highway, as well as new segment Selitë - Lake of Lura to enhance the mountains tourism.

At the moment from our field analysis and research is clearly visible that a lot of investment, mainly from the private sector are focussing on tourism, with a huge quantity of new facilities that are under construction.

Nevertheless, the infrastructures development is happening mainly in the private sector and as a consequence only roads are developed reducing or even cancelling the public transportation development. Considering the high potential of the region for tourism, the necessity of the administration to extend the tourism business outside of the summer and the future and more and more growing elderly tourism a new approach is needed.

Fig.1/ Proposed scenarios in the Shengjin-Lezha segment. Source / https://www.openstreetmap.org.

HCD to foster a more inclusive and viable tourism.

To transform tourism from seasonal to annual and to enlarge the target user, one possible approach is the Human Centered Design which it has proven to be effective in designing service and product especially for frail categories such as elderly people (Petrocchi F. 2022).

Considering the post-pandemic perspective, which has led to the redefinition of urban and suburban mobility, this contribution suggests considering the current and more and more growing trend of ageing society to foster an alternative mobility infrastructure different from the auto-centric model currently used.

In fact, although the mobility car system offers a great flexibility and comfort for current tourists on the other hand the same system also creates many problems including: long queues of traffic to reach the seaside resorts and tourist resorts, the large consumption of land for parking and car services, issues connected with pollution and terrain contamination. Furthermore, with the increase of the ageing sector, many people will not be longer able to reach those places if not properly designed to address elderly issues.

For this reason, it is needed an inclusive and multi-modal mobility, able to connect Lezha region with national and international routes, not only by car but also with public transport such as bus, ships, or trains. By increasing the possibility of being chosen to move from and to Leza is a strategic target, in the long run, to foster a more inclusive and profitable mobility.

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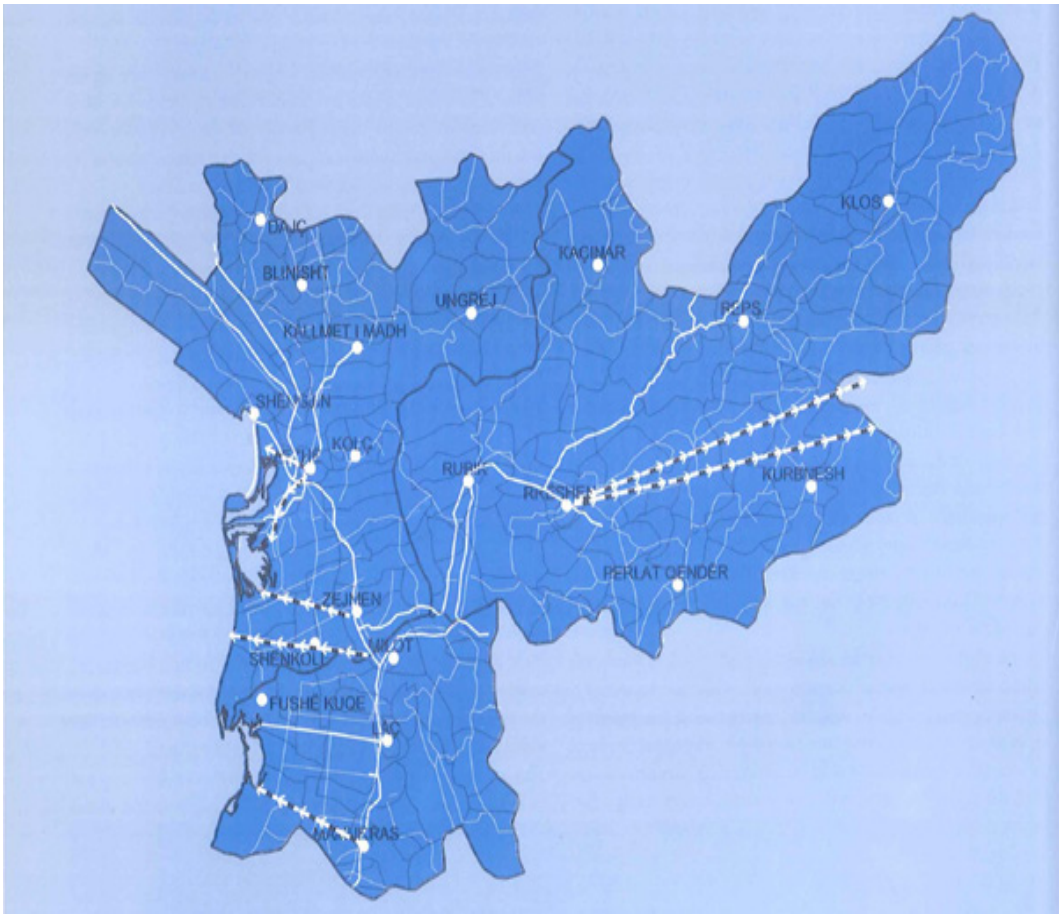

Fig.2 / Mobility Infrastructures. Source/ Regional development plan (UNDP Albania 2005).

Fig.2 / Lezha City View . Source/ Author

Beyond the tourism-led-development logic: the role of art and culture in outlining new spatial planning policies in post- pandemic Lezha.

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Abstract- *The article deals with art interventions' role in developing new spatial planning solutions for the Lezha region in the post-pandemic era, from a perspective of social and economic sustainability. Lezha is a strategic area for tourism development in Albania, but this opportunity also gives way to some emerging issues in its development, most of which have been further emphasized by the pandemics: the main one is avoiding the development of an economic model entirely dependent on tourism and improving locals' quality of life by addressing an increasing need for quality public spaces and participation. In fact, as demonstrated by the pandemics, tourism's revenue is not always a reliable economic source. Furthermore, when planning economic strategies to make a region wealthier, it is crucial to think about parallel social interventions to improve locals' quality of life.*
The article explores on the one hand art's potentialities linked to placemaking, critical reflection, creation of sense of belonging and locals' involvement, thus going beyond the mere promotion of cultural tourism, on the other hand its limits: the final aim should not be to create one more "open air museum", but to address public interest. Finally, the paper suggests some possible applications in Lezha, including a program of artistic residencies to be organized once a year in collaboration with agro-tourisms in Zadrima, with the objective of introducing socially engaged art projects all over the region.

Keywords: Public art; Tourism development; Placemaking; Public spaces; Quality of life.Key words: Smart infrastructure, traffic congestion, internet of things, sensors, accessibility

Introduction

Lezha region is considered to be a strategic area for tourism development in Albania, due to both its very favorable geographic position and good climate. In fact, infrastructural connections are possible both by sea through Shengjin's port, by train through the international Lezha-Shkodra-Montenegro railway and by car through the Tirana-Lezha-Shkodra highway. Furthermore, Lezha gathers a wide variety of natural and cultural heritage sites, which represent a precious potential to build new touristic itineraries: among the most important ones are Rana and Shengjin's beaches, the Kune-Vain and Patok valleys, the Lura Lakes, Lezha's castle, Scanderberg's tomb and the cave of Shenavlash, but there are many more. For these reasons, the Regional Development Strategy for Lezha region, drawn up by Lezha's Regional Council with the support of REC Albania and UNDP in 2005, insisted not only on building touristic villages and tourist ports along the coast, but also on fostering mountainous, archaeological and historical tourism (Regional Council, 2005).

Tourism is seen as a key element to ensure long-term economic development and social-environmental prosperity, thus making Lezha a wealthy region and giving a better future to its inhabitants. Albania 2030 Manifesto turns the spotlight on

Figure 1. Proposed scenarios in the Shengjin-Lezha segment (source:https://www.openstreetmap.org).

Albania's touristic potentials, pushing towards the diversification and extension of its touristic offering, going beyond coastal areas and summer seasons, by promoting new products including combined destinations and itineraries in inland regions (Aliaj, Janku, Allkja, Dhamo, 2014). According to this document, the main problems for tourism development in Albania have been the lack of the population's awareness, local and private actors' poor capacity building and absence of national spatial visioning policies.

Lezha being one of the poorest regions in Albania, with national records in illiteracy, unemployment and lowest own income p.c. rates, the Regional Development Strategy suggested mountainous, coastal, cultural and fishing tourism development as one of the strategic interventions to reach Goal 1, that is to eradicate extreme poverty and hunger. In particular, the project aimed at reducing the unemployment rate and the percentage of families receiving economic aid and improving the Human Development Index (Regional Council, 2005).

If tourism unquestionably remains an important opportunity for Lezha's economic growth on the one hand, on the other one the Covid-19 pandemics highlighted some emerging issues related to tourism-led-development logics. Due to the health emergency, borders were closed and touristic influxes were blocked, thus showing that tourism-linked incomes are not always a reliable economic source. Among the main concerns are: fostering a slow-and-safe tourism during the whole year by promoting access to local cultural heritage, naturalistic and agro-touristic sites; avoiding the development of an economic model entirely dependent on tourism; improving locals' quality of life by addressing an increasing need for quality public spaces and participation; reducing traffic by introducing more sustainable and attractive mobility alternatives.

Taking these problems into consideration, this paper aims at analyzing the role art interventions may have in developing new spatial planning solutions for Lezha region in the post-pandemic era, from a perspective of social and economic sustainability. In order to achieve these results, the applied methodology was characterized by three phases: the first one included fieldwork, visits in Lezha, observations and interviews with local authorities; this was followed by a project phase, carried out in a multidisciplinary team, working on settlements and infrastructures' proposals; the final one involved in depth study of bibliography.

Art in public spaces has been increasingly employed in integrated urban regeneration processes, especially from the beginning of the 2000s: this is due to the culture-led regeneration logic's success, which spread all around Europe between the 1980s and 1990s, and to Richard Florida's famous creative city concept. Several studies outlined that during the second half of the 20th century the idea of art in public spaces evolved as follows: from "art in the 20th century the idea of art in public spaces evolved as follows: from "art in public space", reproducing in open spaces and wider scale museum and art galleries'

Figure 2. Castle View. Source/ Author

artworks without paying attention to the context, to "art as public space" (site specific), interacting with its environment but not with its public, to "art in the public interest", interested in social and cultural dynamics, a tool to bring together communities through community specific interventions (Mazzucotelli Salice, 2016). This last idea of art in public spaces may be the most fruitful one to consider when developing new spatial planning solutions for Lezha, as the idea is not that of simply beautifying the landscape and creating a new open air museum, which would function as a touristic attraction, but that of addressing locals' needs and trying to improve their quality of life.

Many national and international cases have shown art's potentialities in terms of placemaking, critical reflection, creation of sense of belonging and locals' involvement when dealing with urban contexts: an Albanian example might be Nikolin Bujari's Bus Stops (Tirana, 2006), which consisted in the creation of a map showing the bus lines operating in the capital and in its installation in several bus stops, thus dealing with the needs of the citizens and at the same time functioning as a protesting action towards Tirana's Municipality. Another significant case is that of Haha's FLOOD (Chicago, 1992-1995), which involved the collaborative building of a hydroponic garden devoted to HIV-infected patients, where free meals were provided and educational activities and events related to alternative therapies, nutrition and horticulture were held. One last example might be Austrian artists' group WochenKlausur's Medical care for homeless people (Wien, 1993), which consisted in the creation of a mobile medical clinic providing free care to approximately 700 homeless patients per month and which became a permanent institution after some years.

These kind of socially engaged artistic practices can offer a new perspective on how to improve locals' quality of life, on the condition that some limits are considered: in particular, the risk of sacrificing art to territorial marketing and city branding's objectives through shallow beautification practices and the risk of using art as a replacement for urban policies instead of integrating it with them. These problems have been considerably frequent, especially when art interventions were aesthetically valuable and transformed the urban landscape (Urban Art's murals are maybe the most blatant example of Public Art's exploitation for commercial and touristic purposes).

Given this background, we would like to conclude this contribution by suggesting a possible application of artistic practices in Lezha, with the aim of improving its inhabitants' quality of life and its public spaces, thus supporting the region's fragile social fabric during Lezha's economic and touristic development process. The main idea is to introduce a program of artistic residencies to be organized once a year in collaboration with agro-tourisms in Zadrima, with the objective of creating public artworks all over the region, with a particular attention to public spaces and sustainable mobility infrastructures such as cycle paths and the railway line. The program would host selected artists, who

Figure 3. Castle View. Source/ Author

would live in Lezha for a medium-long period of time and would study both the territory and the locals' needs, with the aim of activating social processes rather than producing material artworks.
If art interventions were to be realized in this way, we think that they may have a significant role in outlining spatial policies to address Lezha's post-pandemic development, paying attention not only to tourism-related economic concerns, but also to social issues.

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Post- Pandemic digital space integration in Lezha

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Abstract-*This article aims to evaluate the potential for digital space integration in the Lezha region by taking into account Albanian urban planning practice and some Western experiences in the problematic context of the post-pandemic period as well. The digital hybridization of space is a key component of European spatial planning and is one possible way to deal with the criticalities raised by the COVID-19 crisis. The pandemic has deeply changed the European approach to spatial planning, highlighting the necessity to rethink mobility systems, public spaces and the relationship between space and health. The paper proposes to adopt a context-based and small-scale approach to maximize the positive effects of the digitalization of some spaces related to agritourism, mobility and environmental conservation. This approach would allow a regional way to the digitalization of space connected with the local culture and in dialogue with the informal capacities of the territory.*

Keywords: Planning, Post-pandemic, Digital space, Lezha, Methodological approach

Introduction- The theoretical and practical context of spatial planning in Albania is extremely complex. Indeed, the relationship between social, political and administrative levels has been marked by a non-linear history ever since the dictatorial regime collapsed (Aliaj, Perna 2021). The complexity of these processes influences also the spatial planning strategies. From a methodological point of view, we have at the same time a tendency to pursue the Europeanization of planning philosophy and the awareness that «Emulation of spatial planning system of more developed countries it is not a solution, in fact that is a facade which can create other problems in future» (Janku, Allkja, Aliaj 2017). Moreover, the Albanian territory is characterised by a deep divide between the larger cities – especially Tirana – and the rest of the country, where the population is scattered in small settlements. These settlements, often informal, characterize both the peripheral areas of larger towns and the rural areas and certainly constitute an issue but also an opportunity from a planning perspective (Kacani 2017). This pattern is present also in the Lezha region. The municipality of Lezha consists of two main towns – Lezha and Shenjin– and 65 villages. Both The region and the municipality of Lezha have a rich cultural and natural heritage. Indeed, the city of Lezha is regarded as a centre of cultural attraction deeply connected to the Albanian identity and the city of Shenjin is one of the most popular destinations for seasonal tourism in summer. Furthermore, the Lezha region, which lies between Tirana and Shkodra, is crucial for the connection between the northern border and the capital. These are among the most important reasons why the spatial planning of this region is so pivotal for the Albanian development.

Dealing with the context

The Albania 2030 Manifesto distinguishes two main approaches to spatial planning: on the one hand, a hard approach dealing with large scale and regional or national level of governance, on the other hand,

a "fuzzy" more flexible and task-specific approach (Janku, Allkja, Aliaj 2017). This difference is particularly relevant also when it comes to digital space planning. Indeed, nowadays spatial planning needs to consider that we live in an increasingly hybrid environment in which technology has changed as much the materiality of our experience as our ability to interpret it (Floridi 2014, 2020). This transformation has given rise to many debates in architecture and urban planning, defining new aesthetic and compositional standards (Carpo 2017, Curasano 2017), bringing out the smart city paradigm (Harrison et. Al 2010, Shelton, Zook, Wiig 2015) and opening up fundamental questions for the future regarding the relationship between urban space and artificial intelligence (Batty 2018, Cugurullo 2021, Bratton 2021). Moreover, the impact of the digital revolution on spatial planning nowadays has to be connected with the issues raised in spatial planning by the COVID-19 crisis: re-shaping streets and public space, re-thinking urban space in a more local way, engaging people in a more resilient and sustainable way of life and accelerating circular economy (Neuman, Chelleri, Schuetze 2021, Afrin, Chowdury, Rahaman, 2021). Indeed, Covid-19 has challenged some established trends in spatial planning by bringing out new needs and risks. It is in this problematic context that a mode of digital space integration needs to be shaped, addressing the specific needs of the Lezha region and trying to avoid the mistakes that have been made elsewhere in the implementation of digital technologies. Indeed, the digital integration of space in western countries, especially with reference to the urban dimension, has come under severe criticism in recent years for an excessively top-down approach, a lack of attention to the peculiarities of places, modest community involvement, and an essentially technocentric approach (Greenfield 2013; Trencher 2019).

In the regional context of Lezha, the digital integration of space could be relevant at least in three ways: agritourism, sustainable mobility and monitoring environmental issues. First of all, a strong agritourism proposal is being developed. This proposal is based on the presence of small farms capable of attracting both national and international tourism. The coordination of this Bottom-up network of small business could be made more efficient and visible through a digital integration of space. Moreover, increasing sustainable mobility is surely an objective for the region. This will be pivotal in the necessary perspective of a traffic reduction – increasing the liveability of spaces and decreasing pollution – to intensify tourist attractiveness and the possibility of healthy mobility for citizens. Finally, Lezha region has some criticalities connected to pollution and climate change. The main issues are polluted water and coast erosion (WDF 2021). Also, in this context the implementation of a network of sensors for the monitoring of water pollution and costal erosion levels could be extremely beneficial.

Perspective: Seeds of digital integration of the space

Certainly, digital spatial integration is an opportunity for regional development, promotion and conservation for Lezha: tourism, mobility and nature preservation can certainly be the focal points of this intervention. However, reflecting on the approach and ethical framework through which this integration is to be implemented seems equally crucial. Indeed, the applications of technology, even the most sophisticated, present us with human and ethical choices that inform the outcome. As mentioned above, there is an awareness in Albania that following the model of more developed countries uncritically cannot be a solution. Moreover, the amount of informal settlements present in the Lezha region can also be interpreted as a way of land appropriation by the population in which a potential for creativity and adherence of planned solutions to the concrete needs of the communities is enshrined. In analyses of the digital integration of space in more developed countries precisely creativity and the ability to dialogue with communities have been two key themes of critique. In fact, according to Richard Sennett, an overly standardized implementation of technology can lead to a lowering of the creative potential of citizenship by proposing an oversimplified relationship between citizen, infrastructure and services (Sennett 2018). Moreover, Shannon Mattern points out how conceiving space exclusively according to a technological rationality leads to a neglect of the practices of knowledge and appropriation that that territory has expressed in its tradition and history (Mattern 2021). These two examples warn against the risk of impoverishing a space instead of enriching it through digital integration. The alternative between land depletion and land enrichment is not only a merely technological decision, but also concerns the ethical dimension and the approach through which the technology will be implemented. In conclusion, in order to avoid risks and mistakes already made at other times and in other places, it should be understood how a major part of the success of a digital integration of space in the Lezha region will depend on the ability of planners to recognize and value what this region has spontaneously produced and the courage not to eliminate these practices of life and knowledge in favour of blind technological development.

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4

Proposals for the protection and conservation of biodiversity and the Environment.

SUPERIMPOSITIONS. Proposals for environmental systems implementation and biodiversity development in the Lezhë region through a multi-disciplinary approach

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Abstract- *Multiple hazards are present over the territory and their impact extends beyond the administrative boundaries, revealing the need for an integrated local - to national –regional approach with the aim of building resilience, as a response to uncertainties. Lezhë district – a region of 479 km2 located in the northwest of Albania – has a large diverse ecosystem (Gencer, 2014), its environmental and landscape features are of considerable importance and constitute intrinsic characteristics of the region itself. Therefore, disaster risks constitute an issue of prime importance. Extremely important phenomena impacting territorial safety are environmental process changes and sudden spatial transformations caused by climate change. Specifically, the region faces risks related to hazards like surface water flooding, due to extreme rainfall, sea level rise, rock falls, forest fires and also seismic-triggered events. The above-mentioned hazards combined with high levels of vulnerability are consequently followed by losses in terms of physical, economic, environmental and also impact on biodiversity. Facing such challenges, it is necessary to build a large-scale strategy to build territorial resilience through strengthening environmental systems. When dealing with complex issues where biotic and abiotic components are involved to propose a design strategy, a multi-disciplinary approach is a prerogative. This contribution is developed under the framework of the two-week workshop at POLIS University and proposes a macro-strategy that faces environmental and territorial issues, followed by specific project actions related to the implementation of blue and green assets with the objective of reducing disaster risk.*

Introduction - Albania is a country characterized by a high number of natural events affecting most of the territory. These events are of a geophysical nature mostly earthquakes and landslides and of a hydrological and meteorological nature like flooding, erosion, and flash floods due to heavy rain. The flooding is also due to discharges from hydro powerplants during the winter. The likelihood and nature of these events varies, but , Albania is affected each year by such events resulting in losses from the economic and physical point of view and often even in human losses. The losses are due to high levels of vulnerability the built systems have in the entire country mainly due to lack of proper planning, the quality of materials used in the construction sector, uncontrolled development especially in the littoral areas and many other factors.

Lezhë district – a region of 479 km2 located in the northwest of Albania – has a large diverse ecosystem (Gencer, 2014), its environmental and landscape features are of considerable importance and constitute intrinsic characteristics of the region itself.

Lezhë is located near one of the main tectonic faults that goes through the Albanian territory making it prone to seismic events. In addition one of the main rivers, the Drini River where the main hydropower plants are built (Fierëz, Koman and Vau i Dejës) goes through this region, increasing, therefore, the likelihood of floods during periods of heavy rain.

Taking into account the characteristic of

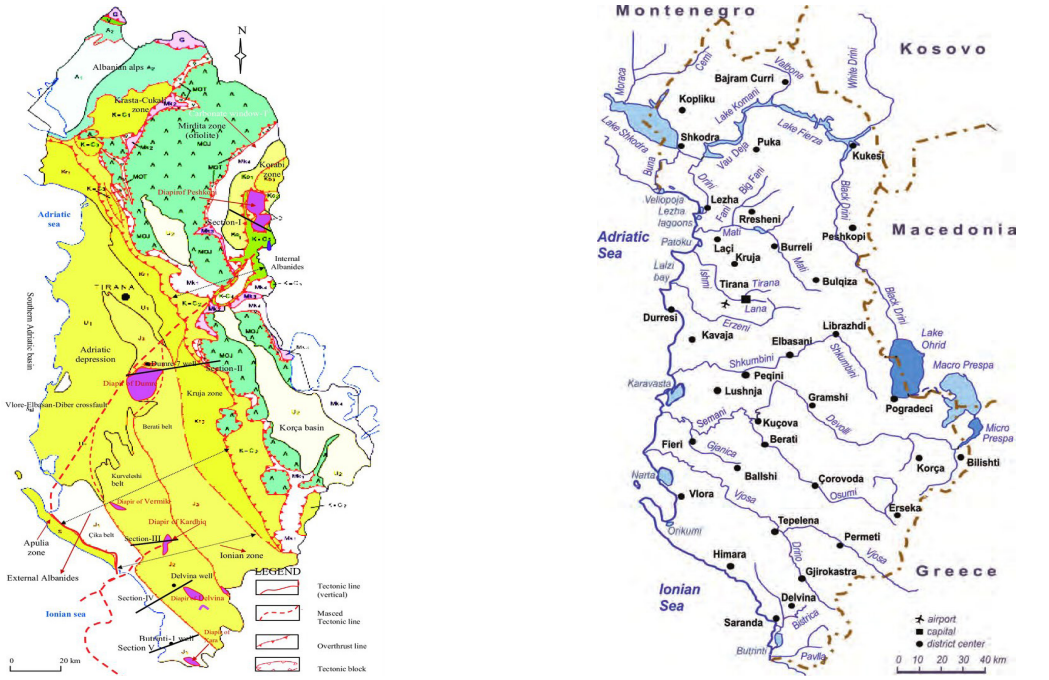

Fig1. a) Hydrographic Map of Albania (source: Miho et al., 2013); b) Schematic Tectonic Map of Albania (source: Prifti et al., 2013)

the region and the numerous hazardous events that can have a significant impact, makes disaster risk and its reduction an issue of prime importance. For decades the approach toward hazardous events has switched from emergency-based to prevention strategies before the event occurs (Sutanta et al., 2010). In the case of complex urban systems, the definition of appropriate strategies requires a multi-disciplinary, multi-scale and holistic approach. The main aim of this contribution is therefore to try and propose strategies for reducing disaster risk in which the aforementioned requirements for disaster risk reduction are met for the case of the Lezhë region. The proposals switch from general strategies to specific project actions in terms of (1) blue systems implementation and (2) green systems implementation. The strategies are proposed based on the information obtained by the site visits in Lezhë, Shëngjin and Kune Vajin, archival research and mainly information provided in the form of maps since the superimposition process itself requires such maps to overlay and give a specific output based on the proposals of Ian McHarg in his work Design with Nature. Detailed information about the process will be given in the following paragraphs.

The work is focused not only on the urban fabric but also on the natural areas part of this region and thus the objectives may be summarized in the following points:

- Analysis of built- environment, actual situation and potential interventions
- 'Preservation and strengthening of the environmental systems
- 'Preservation of biodiversity

A complementary work needs to be done in analyzing relevant literature that deals with the relationship between disaster risk reduction and complex urban systems to better understand the international context to try and adapt it to the context of Albania, and specifically Lezhë.

Driven territorial transformations through strategic and design actions can be obtained through the analysis of the actual environment, the generation of risk scenarios to identify possible transformation elements.

Methodology

The proposal of strategies on different scales taking into account different fields of studies required extensive theoretical and practical work. The group consisted of engineers, biologists, an architect and an artistst, and each one presented their ideas on strategic intervention on the territory taking into account their expertise.

The first step was to try and holistically analyse the region, taking into account territorial and physical aspects, combined with social, environmental and biodiversity elements. This was done through an initial brainstorm session taking into account that the main focus was disaster risk reduction. The initial phase consisted of a general overview of the area based on several mapped information, in which specific areas of special importance were defined like dense urban areas, protected natural areas and their connection to the urbanized part of the region, wetlands etc. The various field visits were necessary for understanding and knowing the area

Fig. 2 / Blue and Green System for driven territorial transformations. Source/ the authors

better and also for the identification of the problems or areas which were defined in advance by the studies of the various maps made available.
Considering the characteristics of the area, the problems in terms of territorial and environmental aspects, and the strategic role the region has it was decided that the analysis and proposals should be done following a multi-scale approach. Furthermore, for a pragmatic approach, based on expertise, each member was focused on specific areas and aspects which in the end were compiled in such a way to reflect as clearly as possible the proposed strategies. In terms of outcome and general work, the information is represented mostly in form of maps on different scales using GIS.

Disaster Risk Reduction & Lezhë Region

Disaster is defined by (UNISDR, 2009, p.9) as "A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impact, which exceeds the ability of the affected community or society to cope using its own resources."
Based on this definiton, disaster can be seen as a combination of hazard severity with the possible consequences based on the levels of the vulnerability a built environment has, this combination is followed by losses in terms of physical, economic, environmental and also impact on the biodiversity. One of the most important documents, the SENDAI Framework for Disaster Risk Reduction 2015-2030 states that the multi-hazard management of disaster risk must be done at all levels and within all sectors to prevent new and reducing existing disaster risks through integrated economic, structural, legal and social measures (UNISDR, 2015). Among the four priority areas for action, the document emphasizes the need for investing in disaster risk reduction for resilience and enhancing disaster preparedness for effective response and "Build Back Better". The former focuses on the role investments have in enhancing resilience while the latter points out the need for proper disaster risk management in each phase; preparedness, recovery and rehabilitation to build better and safer urban and non-urban environments.
The strategies proposed in this work are in line with the priorities listed in the SENDAI document due to the combination of large-scale strategies with local scale strategies with the aim of building territorial resilience through strengthening environmental systems. When dealing with complex issues where biotic and abiotic components are involved in order to propose a design strategy, a multi-disciplinary approach is also prerogative.
Lezhë city and the entire region statistically is one of the most affected regions by natural hazards in Albania. Hazards of a hydrological and meteorological nature are very common in the area, followed by seismic events and by additional triggered hazards like rockfall, landslide, or liquefaction especially in the littoral part of the area which is characterized by loose sand and high levels of groundwater. Seismic hazard maps of Albania show that the Lezhë region is characterized by peak

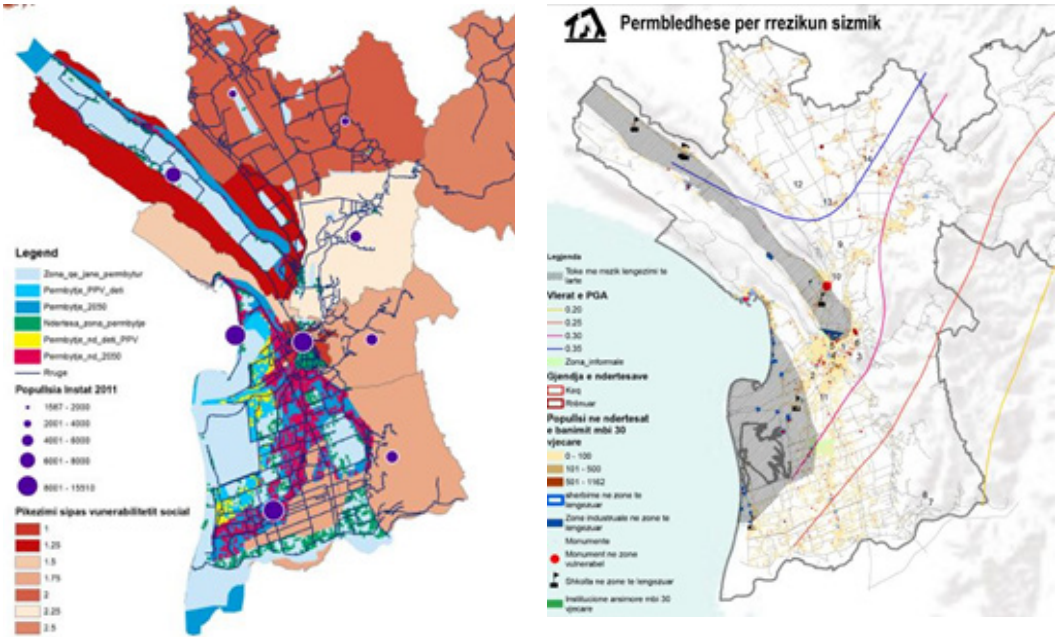

Fig.3/ Example of mapsanalyzedd in the initial phase. Source/ CoPlan

ground accelerations from 0.208- 0.338g with a probability of 10%/ 50 years (Aliaj et al., 2010).Such "secondary" events were noticed in the last earthquake that hit Albania on November 26, 2019, in Durrës. One of the most affected areas by this seismic event was the Lezha region, with buildings destroyed and out of function and signs of liquefaction in specific areas. According to official data by the municipality 76 families, or more than 288 inhabitants had to be evacuated during the seismic event. In addition, due to the presence of hydropowers in Drin River, which goes through this region, during the peak periods of rainfalls, flooding is a frequent and problematic issue of the rural and urban areas.

Historical and more recent events, clearly show that the region is highly affected by natural hazardous events, causing each year lots of economic losses and hindering the development of the region. The reason for this high level of impact is due to the high levels of vulnerability characterizing the area due to uncontrolled development, poor quality of materials used for construction, poor construction techniques etc.

Lezhë Urban System- Seismic Risk

Based on the widely accepted definition (EC, 2011), the risk is considered as a combination of the possible consequences of an event with the probability of its occurrence. The consequences are determined based on the instrict characteristics of the urban systems which give the level of vulnerability and on the level of exposure, which gives the assets exposed to a hazardous event. The probability of occurrence of a hazardous events, known as hazard assessment can be defined taking into consideration detailed analysis of historical past events and actual conditions, and for the case of a seismic event (Kramer, 1996) summarizes two methods Deterministic Seismic Hazard Assessment (DSHA), and Probabilistic Seismic Hazard Assessment (PSHA).

The definition of risk is tightly connected firstly to the aim of the study and secondly to the data availability. The approaches vary from simplified qualitative assessments to the advanced quantitative assessment. Based on the aforementioned requirements, for the case of the city of Lezhë, a semi-quantitative methodology based on indices is seen as the most feasible approach. Such an approach is acceptable in general for risk assessment of urban systems since it provides a holistic approach due to the possibility of a combination of different variables of different nature (physical, social, environmental etc.).

In terms of buildings, the city is characterized by a combination of old buildings typically consisting of reinforced and unreinforced masonry structures (mostly along the area "Beslidhja", "Grumbullimi"), and also prefabricated structures (along street Frang Bardhi) with new reinforced concrete buildings with frame, wall or dual system structural typologies (near the city centre and Shëngjin).

The state of many actual old buildings


Fig.4 / Flooding in the Lezhë region due to intense rainfall. Source/ balkanweb.com


Fig.5/ Typical structural systems in Lezhë city; reinforced concrete (left) and (right) prefabricated buildings. Source / Merita Guri, 2020

is not good due to the age, the action of external factors like humidity or corrosion and human interventions, this is also one of the main reasons for the damages during the November 2019 Earthquake. The situation after this earthquake further aggravated the conditions of existing buildings which were not demolished resulting in higher levels of vulnerability.

Besides the building stock, other elements of the urban systems need to be considered including the infrastructure network, open space and the community. A preliminary study using GoogleMaps and site visit showed that the street network of Lezhë in many areas of the city can't withstand a seismic event during the emergency phase, some of the main reasons include; narrow streets, non-uniform distribution of street categories, lack of appropriate nodes that would improve the accessibility, quick evacuation and connection to important critical infrastructures like the hospitals or fire stations. In some areas due to densification processes, many residential and non-residential buildings are located very close to one another triggering possible domino effects during a potentially seismic event.

Based on preliminary observations, the actual situation of the Lezhë region including the city of Lezhë and Shëngjin needs an improvement in the preparedness level to resist a possible future seismic event. Analyzing risk at a local scale may represent one of the most efficient ways to improve the situation. Even though analyses have been done on greater scales throughout the country, detailed analyses in a local scale are important since the effects of such events are highly felt on this scale
by the community itself.

A good approach would be that of dividing the city into different zones based on several criteria which might include building stock, street network, land-use etc., and for each of these zones, levels of risk are defined in semi-quantitative ways through indicators. The output might be introduced as a fundamental information about actual situation, based on which allocation of funds and future interventions can be made to reduce such risks in the cases when they are present. Due to requirement for high usage of these lands mainly for tourism purposes, results of a detailed risk assessment in this scale can provide a good tool to control such developments in such a way to be safe for the community.

Blue System Implementation

The proposal of strategic action in terms of blue system implementation required a careful analysis of the water as a modifier of the existing system. Therefore a risk scenario was developed to project the condition of extreme territorial transformation. The extreme risk scenario was achieved through the analysis of the flooding caused by surface water and extreme rainfall and a sea level rise of 1.5m since they represent the main problems facing the Lezha district. Such representation on a district scale allows us to understand which areas coexist with a high risk that needs to be addressed to mitigate their impacts.

A reinterpretation of the landscape,

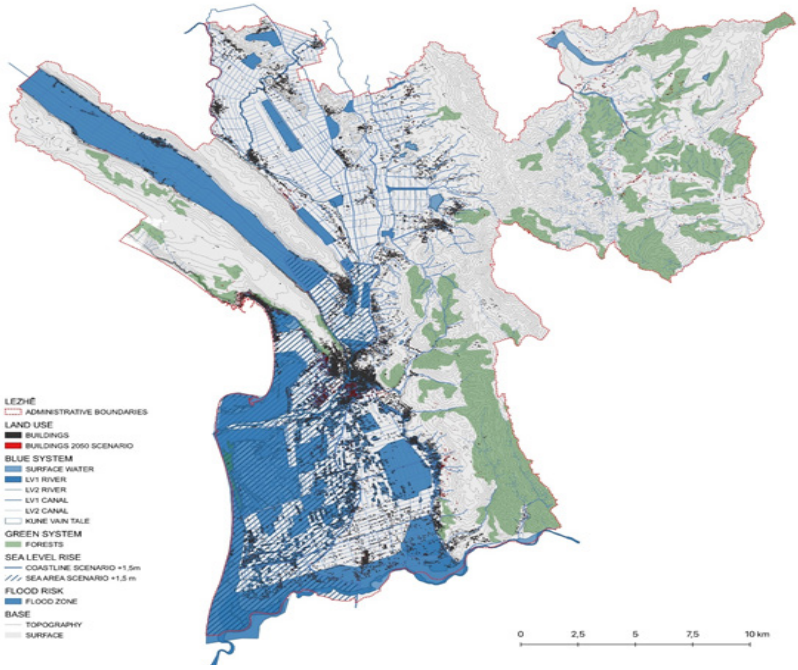

Fig.6 / Water as a modifier. Extreme risk scenario. Source/ the authors

identifying linear infrastructures as elements that can be used to improve territorial resilience performance is the first strategic action (P01). Recognition of infrastructures as preponderant mutant actions on a territorial scale makes it possible to trigger design actions with direct consequences on the landscape. The aim is that of a transition from wetland to agricultural land in a hybrid way rather than rigid measures using for example high embankments. These linear infrastructures are superimposed on the agricultural drainage system consisting of countless canals of different hierarchies. This hybridisation of systems makes it possible to create new water storage tanks and green ecosystems that formed a barrier with native plants resistant to water and salt.

In addition, through improved water resource management it is possible to protect the land from salinization that comes as a result of the advancement of the sea. At the same time (P02) we reach a reduction of pollution caused by cultural eutrophication in the lagoon. By digging a web of water channels from the Drin River to the shores near the delta to dilute the pollutants and by bordering them with cane thickets to boost the purification it will be possible to create new environments for wild animals that are lowering in number because of the reduction of their natural habitat for nesting, rubbing and feeding; this solution will also reduce the presence of typical invasive species, like phytoplankton, mesophytes and crustaceans that are profiting of the actual condition of cultural pollution of the Kune-Vain lagoon, due to the human activities.

Another dangerous phenomenon, not only for Lezha but for the entire Albanian coastal area is erosion. Hundreds of square meters of land are lost every year due to this phenomenon, one of the main reasons for this phenomenon is the disruption of the river regime due to various human interventions like embankments used for irrigation or the collection of coarse-grain and fine-grain soil materials collected from the bed of rivers to be used as construction materials.

Rivers are an important source of aggregate storage along the sea and a disruption of their regime causes; changes in the deposit volume of the materials making the coastal areas prone to erosion and sea advancement, generation of new dangerous wetlands, and impact on protected areas like the Kune Vain Lagoon. To tackle these negative phenomena it is proposed a reorganisation of Drin and Mat River dynamics (P03) through the removal of quarries, this action allows fluvial aggregates to reach the coast and compensate for the erosive action of the sea, thus mitigating sea level rise.

Green System Implementation

The second focus of the proposed strategic action is on the green (forest) system which together with the blue system represent two predominant systems. Forests have a fundamentally protective role against the effects of climate change, such as foods and water scarcity, while also contributing to CO2 reduction in the atmosphere through their sink function.

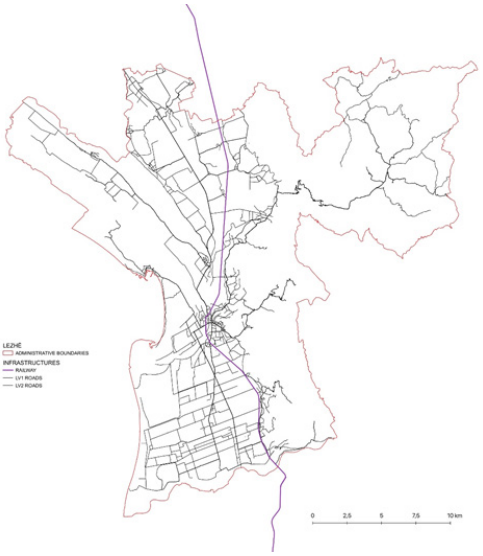

Fig.7/ Infrastructure system in Lezhë district. Source/ the authors

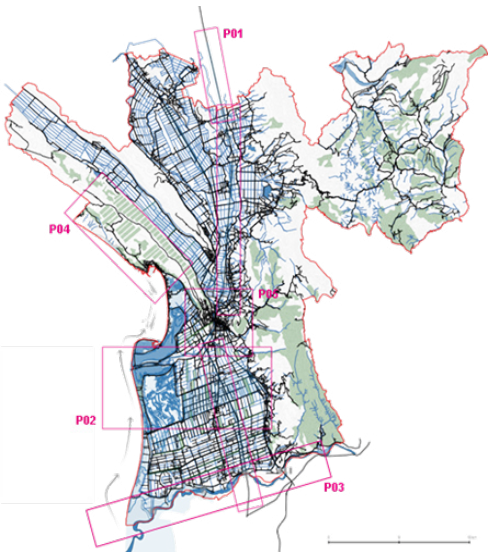

Fig.8/ Lezhë as a superimposed system . Source/ the authors

Yet, forests remain largely unprotected or poorly managed in Albania, still prone to illegal logging and trade, regardless of the respective moratorium approved by the Parliament in 2016.

The first proposal within the green system implementation or the fourth strategic action in general (P04) consists in developing an ecological corridor that connects the wetland and lagoon with high-land, connecting also two natural protected areas of the region: Rana e Hedhun and Kune Vain Lagoon. The need for such eco-corridor is due to fragmented natural landscape and protected areas, biodiversity trapped in case of wildfires, hazardous accidents or floods, the decrease in ecosystem services due to deforestation and finally such corridor would serve as a "fence" to urbanization processes. Biodiversity safe passage, the increase in ecosystem services through forestation and the development of a wind energy park are some of the functions of the ecological corridor in addition to the aforementioned connection functions that it has. The specific proposal for the connection of the areas consists in two proposal areas, Marlekaj Hill (proposal one) and a connection NOD (proposal two) as represented in the sketch below:

The combination of all the proposed strategies gives a new superimposed system that aims to tackle the discussed issues. Lezhë as a new superimposed system together with the proposals is given in the final map below and a summary of the results is discussed in the following conclusion paragraph.**Conclusions**

In conclusion, starting from a broad and integrated vision of issues related to territorial and environmental systems like flooding, earthquakes, biodiversity, this proposal is identified as a pragmatic analysis that seeks to propose specific strategies that will transform the territory to have a positive impact in the resilience levels of the entire district.

Five strategic actions at different scales were proposed in this work, summarized as follows:

a. Landscape as Infrastructure (P01)- where a reinterpretation of the landscape is proposed through the identification of linear infrastructure elements that can improve territorial resilience.

b. Channel Implementations (P02)- where a new system of channels bordered with cane thickets in Drin River towards the shorelines near the delta is proposed. Such intervention can dilute pollutants and can help to create a new environment for wild endangered animals and reduce the presence of typical invasive species.

c. River Management (P03)- where a reorganisation of Mat river dynamics is proposed to enhance the deposit of fluvial aggregates that may tackle coastal erosion problems. The reorganisation consists in reduction and removal of quarries along this river that hinder such aggregate deposits.

d. Ecological Connections (P04)- where an ecological corridor that connects two natural areas in the Lezhë district; "Kune Vain" and "Rana e Hedhun" is proposed, serving also as an area for wind energy.

e. Urban Greenery (P05)- with a focus on the urban fabric, proposing an increase of the green area surface to tackle flood

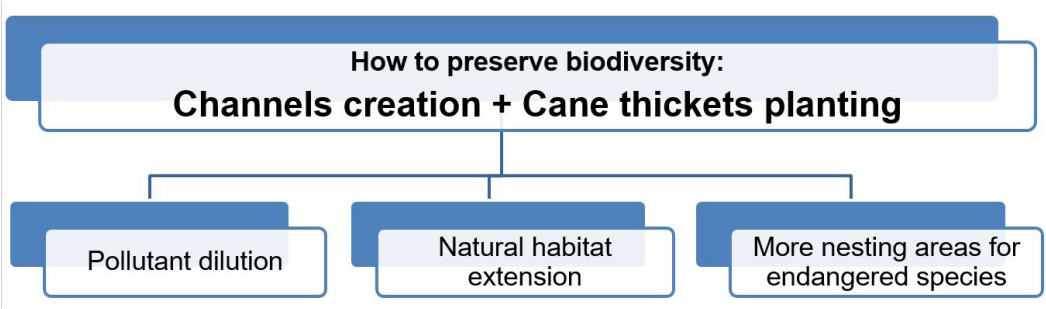

Fig.9/ Proposal for the preservation of biodiversity in Kune Vain Lagoon. Source/ the authors

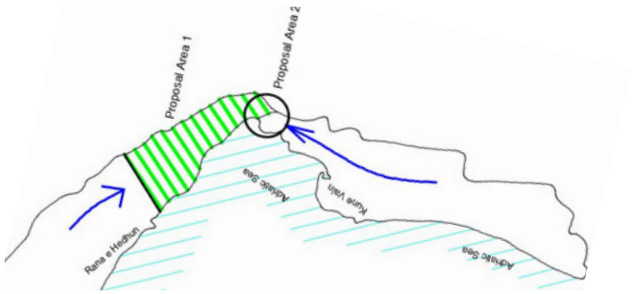

Fig.10/ The proposed ecological corridor. Source/ the authors

issues due to low permeability, increase the quality of air, and increase the spaces for public use.

In addition to the five proposed strategies focusing on green and blue systems, proposals for reducing seismic risk were also introduced. The focus was on developing appropriate methods to assess actual risk and predict future losses from a potentially seismic event by combining all the elements of a complex urban system; the community, the building stock, infrastructure and open space as suggested by (Koren et al., 2018).

The losses can be expressed in terms of physical, economic, social or environmental and can be used by stakeholders to define areas which have higher priorities, allocate funds, reinforce adaptive capacities and develop appropriate strategies for the emergency phase. A good start would be the assessment of risk in the form of indices on a local scale and for areas with high risk more advanced analysis can be further developed.

The strategic directions taken have concrete repercussions on the territory. The new landscape is a hybrid, highly dynamic and expressly resilient landscape. Its adaptive capacity is implemented through the inclusion of new devices that perform well in the face of sudden changes, such as floods, earthquakes and fire. Thanks to the development of specific project themes, smaller scale points were also touched upon with pilot projects of high environmental value. The result is a new territory that accommodates different ecosystems with a high adaptive value.

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Linear infrastructure assets as a territorial system for flood disturbances control.

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Abstract- *Flooding is a cyclical environmental disturbance with implications on ecosystems structure and physical environment (White and Pickett, 1985). Risk management is an increasingly pressing issue within spatial planning that is perhaps the most effective approach to preventing the increase in flood risk through active controls on territorial transformations (Sayers et al., 2013; Meng et al., 2020). At the same time, the development of linear infrastructures is essential to ensure adequate accessibility to services, goods and facilities (Srinivasu and Rao, 2013). Since infrastructure works are territorial-scale interventions with a considerable potential on shaping spatial forms (Strang, 1996) and on directing environmental processes, including alterations on surface hydrology (Raiter et al., 2018) the integrated exploitation of these two implications would allow a widespread territorial intervention able to implement resilience against flood. As linear infrastructures developments are complex works in complex environments (Di Giulio, Emanueli, Lobosco, 2018) there is considerable uncertainty about timing and economic feasibility that arise from the management of public/private interests, the multiplicity of issues involved and the management of huge financial budgets. The aim of this contribution is to discern the limitations and potentials of a multidisciplinary strategy by following a 'research-by-design' approach for the development of a rail transport infrastructure in the Lezhë district in Albania with a specific focus on the integration of flood risk reduction design within infrastructure track layout planning. Through a radical rethinking of territories, this work increases territorial resilience and propose new hybrid ecosystems, making them simultaneously devoted both to functionalist engineering and ecological renovation.*

Keywords: Landscape architecture; Territorial transformations; Flood risk reduction; Linear infrastructures; Ecosystem resilience.

1. Linear infrastructure and flooding: a possible relation.

Flooding is a cyclical environmental disturbance with implications on ecosystem structure and physical environment (White and Pickett, 1985) which is becoming increasingly important due to climate change (Kundzewicz et. al., 2014). Since biological diversity depends on natural disturbances and urban apparatus must reduce risk exposure it is necessary to operate in symbiosis rather than block or nullify those events moving from 'risk prevention' to 'risk management, 2006; Merz et al., 2010; Liao, 2012; Rossano, 2015; Morel, 2022). Risk management is an increasingly pressing issue within spatial planning that is perhaps the most effective approach to preventing the increase in flood risk through active controls on territorial transformations (Sayers et al., 2013; Meng et al., 2020).

At the same time, the development of linear infrastructures is essential to ensure adequate access to services, goods, and, facilities (Srinivasu and Rao, 2013). Since infrastructure works are territorial-scale interventions with considerable potential for shaping spatial forms (Strang, 1996) and directing environmental processes,

Fig.1/ Valli Grandi Veronesi . Source/ Archivio Luigi Ghirri, 1989

including alterations on surface hydrology (Raiter et al., 2018) the integrated exploitation of these two implications would allow a widespread territorial intervention able to implement resilience against flood. Specific attention should be paid to the ancillary systems of infrastructure, i.e. all those elements that are complementary to the primary function of the infrastructure and which are often not taken into account from a perceptive and design point of view, such as waste areas, technical equipment or, track protection elements. The combination of these disengaged elements that accompany linear infrastructures is left to their own devices, finding themselves in a blurred condition ''Fig. 1 Valli Grandi Veronesi (Source: Archivio Luigi Ghirri, 1989)''.

Important design experiences regarding linear infrastructure development have shown how combining landscape design with infrastructure engineering can substantially improve the aesthetic and ornamental qualities of the areas involved . Assuming that the construction and operation of infrastructure is one of the main drivers of environmental change (Doyle and Havlick, 2009; Bélanger, 2013;) it is possible to identify hybrid design practices that straddle landscape and infrastructure, such as the exploitation of earthworks to create water reservoirs and the subsequent creation of artificial wetlands, which would stabilize environmental conditions in flood risk areas.

Based on previous planning and design methodologies, this contribution aimsdiscern the limitations and potentials of a multidisciplinary strategy for the development of rail transport infrastructure in the Lezhë region with a specific focus on the integration of flood risk reduction design within infrastructure track layout planning.

apparatus must reduce exposure to risk, it is necessary to operate in symbiosis rather than block or nullify those events moving from 'risk prevention' to 'risk management' (Werritty, 2006; Merz et al., 2010; Liao, 2012; Rossano, 2015; Morel, 2022). Risk management is an increasingly pressing issue within spatial planning that is perhaps the most effective approach to preventing the increase in flood risk through active controls on territorial transformations (Sayers et al., 2013; Meng et al., 2020).

At the same time, the development of linear infrastructures[1] is essential to ensure adequate accessibility to services, goods and facilities (Srinivasu and Rao, 2013). Since infrastructure works are territorial-scale interventions with a considerable potential on shaping spatial forms (Strang, 1996) and on directing environmental processes, including alterations on surface hydrology (Raiter et al., 2018) the integrated exploitation of these two implications would allow a widespread territorial intervention able to implement resilience against flood. Specific attention should be paid to the ancillary systems of infrastructure, i.e. all those elements that are complementary to the primary

1 Based on UNEP definition linear infrastructures includes roads, railways, pipelines, i.e. systems for transporting people, energy, raw materials and water.

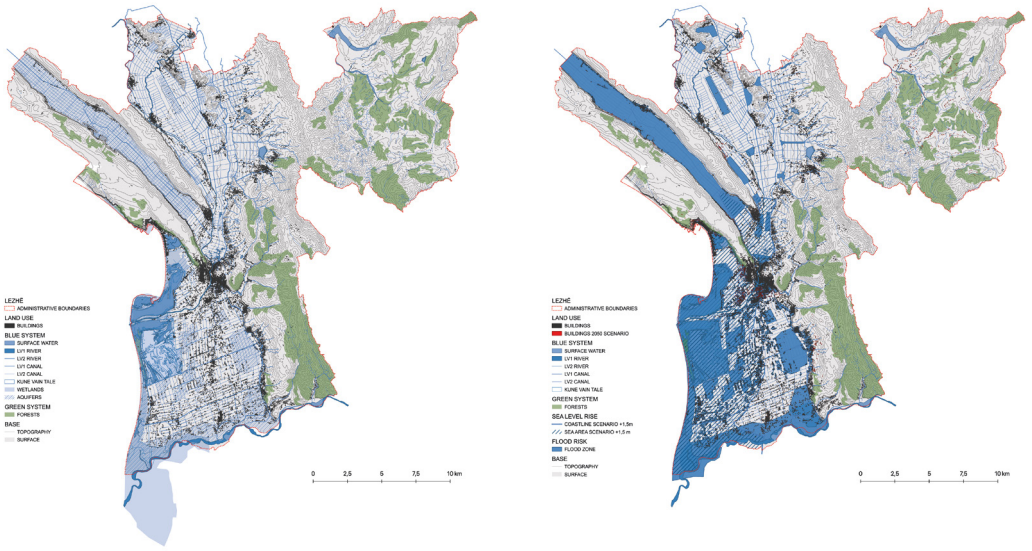

Fig.2/ Lezhë actual conditions and risk scenario. Source/ Author, 2021

function of the infrastructure and which are often not taken into account from a perceptive and design point of view, such as waste areas, technical equipment or track protection elements. The combination of these disengaged elements that accompany linear infrastructures are often left to their own devices, finding themselves in a blurred condition ''Fig. 1 Valli Grandi Veronesi (Source: Archivio Luigi Ghirri, 1989)''.

Important design experiences regarding linear infrastructure development have shown how combining landscape design with infrastructure engineering can substantially improve the aesthetic and the environmental qualities of the areas involved[2]. Assuming that the construction and operation of infrastructure is one of the main drivers of environmental change (Doyle and Havlick, 2009; Bélanger, 2013;) it is possible to identify hybrid design practices that straddle landscape and infrastructure, such as the exploitation of earthworks to create water reservoirs and the subsequent creation of artificial wetlands, which would stabilise environmental conditions in flood risk areas.

Based on previous tested planning and design methodologies, the aim of this contribution is to discern the limitations and potentials of a multidisciplinary strategy for the development of a rail transport infrastructure in the Lezhë region with a specific focus on the integration of flood risk reduction design within infrastructure track layout planning.

2. When infrastructure meets landscape design. The case study of Lezhë.

Lezhë district is a region of 479 km2 located in the north of Albania and present a large diversity ecosystem (Gencer, 2014), its environmental and landscape features are of considerable importance and constitute intrinsic characters of the region itself. Multiple hazards are present over the territory and their impact extends beyond the administrative boundaries, revealing the need for an integrated local local-to-national-to-regional reach to build resilience, as a response to uncertainties. This contribution focuses on the reduction of flood risk through the integration of nature-based environmental actions and linear infrastructure development within a multidisciplinary design strategy. The research process followed a 'research-by-design' , using the design process as a validation tool (Deming and Swaffield, 2011). Furthermore, to guarantee correct projection toward horizons, the scenario-based methodology was adopted as a basis for determining factors linked to alternative landscape transformations (Steiner, 2000) induced by climate change.

2.1 Environmental conditions as a starting point

Where physical and economic settlements are present, flood risk combined with a high level of vulnerability is consequently followed by physical and economic losses (Brochier and Ramieri, 2001; Frasheri and Pano, 2003; Pojani and Tola, 2011). Floods

2 For a more in-depth analysis see the projects in the archive of the Biennal Internacional del Paisatge Barcelona, available at http://www.arquitectes.cat/iframes/paisatge/projectes, specifically see infrastructure project tipologies.

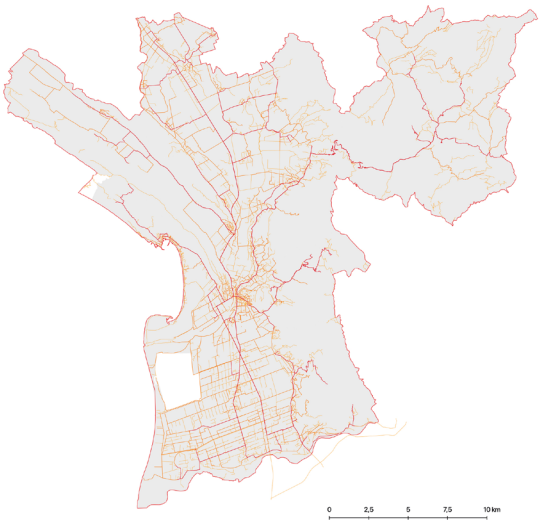

Fig.3/ Lezhë linear infrastructure system analysis . Source/ Author, 2021

caused by surface water and sea level rise are one of the main problems in the Lezhë district and the possibility of at-risk areas being affected increases as climate change intensifies (Milly et al., 2002). The environmental and ecological conditions of the district were analyzed focusing on the hydraulic situation of the area: the identification and representation of the water system characterised by all the specific elements as well as the anthropic footprint allowed the construction of a territorial mosaic (McGarigal, 2006) from which the projection of scenarios was then started ''Fig. 2 Lezhë actual conditions and risk scenario (Source: Author, 2021)''. By projecting the landscape towards a condition of extreme changes dictated by flood risk and sea level rise , it was possible to extrapolate spatial configurations on which to size strategic interventions (Lobosco, 2019).

2.2 Detection of linear infrastructures

Linear infrastructures almost always overlap in a sterile way on tin areas they cross (Giovinazzi, Giovinazzi, 2010) without providing any significant spatial improvement, but rather require action to minimize and compensate for their environmental effects (Sousa, 2020). The paradigm of the negativity of infrastructures must be overturned and transformed into opportunity. Recognition of infrastructures as preponderant mutant actions on the territorial scale would make it possible to trigger strategic actions with direct consequences on landscape, both on a small and large scale (Ugolini, 2020) ''Fig. 3 Lezhë linear infrastructure system analysis (Source: Author, 2021)''.

The territory of the district of Lezhë is characterized as a predominantly agricultural territory brutally crossed by the Rruga shtetërore SH1, an Albanian highway that connects the capital Tirana with the Montenegrin border. Linear logistics and transport infrastructures present very poor conditions there is a total lack in using for il infrastructure. Along the entire flat part of the district, he is the water management infrastructure which, perpendicular to the SH1, connects the Albanian Alps to the Kune-Vain-Tale nature reserve and the Adriatic Sea, as well as supplying all agricultural sectors. In the face of climate change water impact, increasing road traffic and the need for sustainable alternative travel such as rail, there is a clear necessity to strengthen the existing infrastructures exploiting them not only as a purely engineering operation but also as a new performative landscape and environmental system (Bélanger, 2013).

2.3 An integrated spatial transformation

The main design action is the revitalization of the railway line by multiplying its directions of travel. The project proposes to increase the safety buffer zone of the railway line in environmental devices such as accumulation basins, water infiltration zones, and read st infiltration areas . Thanks to the oversizing of the infrastructure ancillary system and the subsequent insertion of water management devices, it is possible to make the infrastructure an environmentally active element capable of impact on a territorial scale thanks to its

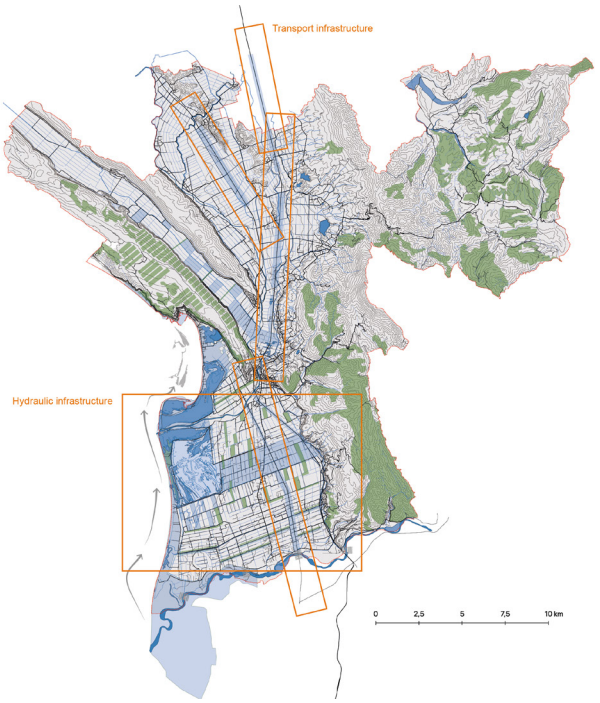

Fig.4/ Lezhë infrastructure and landscape design integration . Source/ Author, 2021

37 km length ''Fig. 4 Lezhë infrastructure and landscape design integration (Source: Author, 2021)''.

The new landscape is highly dynamic and resilient adaptive capacity is that implemented through the inclusion of new water storage devices that perform adequately in the face of unexpected and extreme flooding. The result is a territory that accommodates different ecosystems with a high adaptation value, shaped by the integration of the design processes of the linear railway infrastructure with spatial operations related to landscape design. In a nutshell, this research proposes a macro-strategy that addresses risk reduction through planning and design actions.

3. Discussion and conclusion

As linear infrastructures developments are complex works in complex environments (Di Giulio, Emanueli, Lobosco, 2018) there is considerable uncertainty about the timing and economic feasibility that arise from the management of public/ private interests, the multiplicity of issues involved and the management of huge financial budgets. Similarly, the lack of accurate data concerning environmental structures and predictive detail regarding the future weather events scenarios regarding the Lezhë district implies that the presented study should be intended as a starting point for defining more accurate reasoning and research is methodological proposal addresses design actions related to the development of rail transport infrastructures capable of modifying the territory in its performance and implement its resilience to flooding turbances. In the same way, other types of linear infrastructure networks (roads, pipelines, electricity grids, underground networks, etc.) can also act as risk management devices as they are identified as spatial elements with effective repercussions for landscape and environmental systems.

Combining infrastructure engineering development, landscape design and, risk reduction planning would increase territorial resilience through a radical rethinking of territories, making them simultaneously devoted both to functionalist engineering and ecological renovation.

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IMAGES

Fig. 1 Valli Grandi Veronesi (Source: Archivio Luigi Ghirri, 1989)

Fig. 2 Lezhë actual conditions and risk scenario (Source: Author, 2021)

Fig. 3 Lezhë linear infrastructure system analysis (Source: Author, 2021)

Fig. 4 Lezhë infrastructure and landscape design integration (Source: Author, 2021)

Flooding rehabilitation in Lezha city.

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Abstract- *Climate change is one of the most important issues discussed worldwide, as it has local and regional impacts that profoundly affect communities. Precipitation is the most critical and key element in both the atmospheric and hydrological cycles. The variability of the precipitation regime is the main consequence of climate change which is bringing the most frequent occurrence of extreme events such as droughts and floods. There is a growing need for strategic assessments of changes in precipitation regimes in current and future conditions. The aim of this study was to evaluate the changes in the precipitation regime in the city of Lezha using the data observed from the meteorological stations of the Institute of Geosciences. By studying the data of last year's 2020 and 2021 compared to the multi-year average we understand the trends of the variability of the precipitation regime, in which we reached the conclusion that we have an increase in the amount of precipitation, which leads to rapid flooding and urban flooding. The main problem regarding urban flooding in Lezha city is because of the precipitation. Following the problem typologies which are mainly due to large areas of concrete or similar non-permeable materials, combined with dense buildings and with the lack of proper drainage road system or proper maintenance, two alternatives are seen as a solution to these problems. Worldwide, Green Infrastructure (GI) has mainly been discussed from an adaptation strategy perspective in cities and urban areas. However, we believe that GI can also function in rural and suburban areas where depopulation is prominent. After the study of the area, it was noticed that there are no free spaces as all the neighborhoods are occupied and concreted. Starting from this, the first solution concerns the conversion of concreted spaces into green spaces, this makes it easier for water to penetrate the ground surface. Green spaces have a fundamentally protective role against the effects of climate change, such as food and water scarcity, while also contributing to CO2 reduction in the atmosphere through their sink function. Adding green spaces besides soil water permeability thus contributing to the reduction of floods would help in terms of reducing pollution of the air and creating spaces that citizens can use. Many such spaces were identified in the city of Lezha that's why this proposal comes. In some areas of the city, there was a problem with the lack of open spaces of any kind due to the high density of buildings. Being impossible to intervene with the addition of green spaces in these areas, as a solution is seen in the intervention in the drainage system of the roads. The roads in these areas were very narrow and had no drainage system at all the few that had been in very poor condition. These are seen as emergency interventions to solve this problem in the city of Lezha. In conclusion, based on a broad and integrated vision of issues related to territorial and environmental systems, this proposal aims at concrete actions to ensure the adaptation of the territory and the environment to the phenomenon of urban flooding.*

Keywords: urban flood, precipitation, climate change, green spaces, territory.

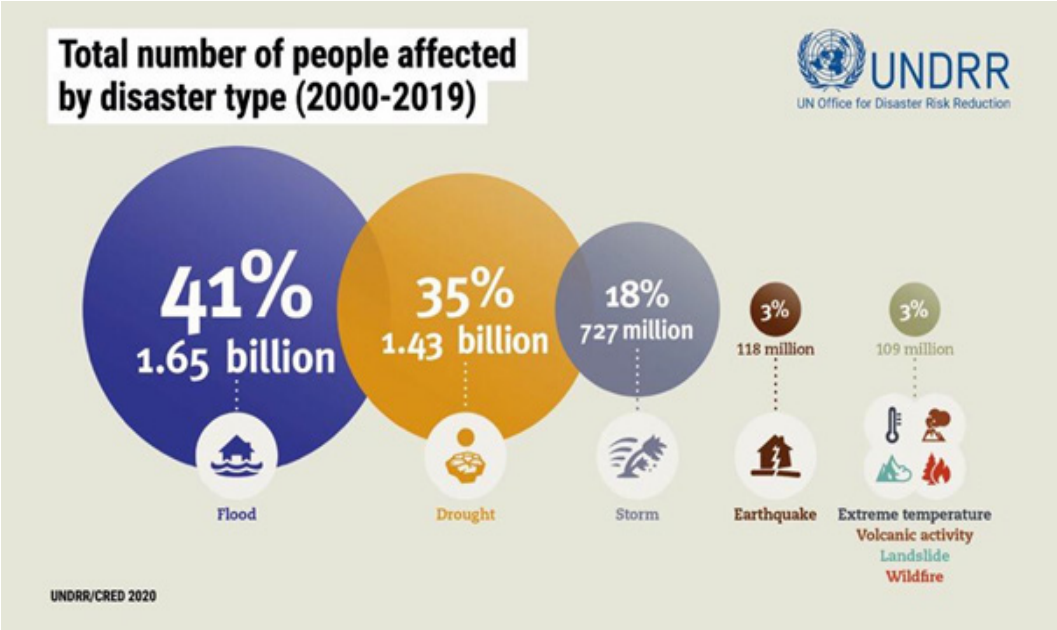

Fig.1/ People affected by disaster type (2000-2019). Source/ UNDRR

1. Introduction- Until now, changes in the global climate have occurred naturally, over centuries or millennia, due to different atmospheric cycles. Over the last few decades, human activity has been influencing changes in atmospheric composition, thus causing global climate change. Direct tangible damage includes the physical damage caused to property and contents in both residential and non-residential sectors as well as infrastructure through direct contact with flood waters (Oliveri & Santoro et al. 2000). In many flood impact assessments, only direct tangible impacts are considering the expense of the categories such as intangible impacts (Ward et al. 2011).

Climate change and urbanization are leading to more water use and increased exposure of society and assets to extreme hydrological events, such as floods, droughts, and loss of life from high temperatures or frosts. Precipitation and temperature data for the last few years show that climate change has occurred.

Several meteorological measurements have been selected for the Lezha Religion. In terms of time distribution of precipitation, the largest amount of them, about 70% is observed in the cold half of the year with a maximum in November and a minimum of precipitation in July. This fact emphasizes quite well the Mediterranean character of our country's climate.

Extreme weather events and impacts on land, (especially agricultural land) environment, and economy. Climate change has triggered some extreme weather events with impacts on the territory, and agricultural land, such as :

- Floods, flash floods
- Extreme temperatures
- Heat waves
- Frosts
- Droughts
- Storms
- Landslides
- Forest Fires
- Desertification of the land, which has affected about 1/3 of the territory
- Physical degradation of land and loss of productive capacity
- Damage to nature and infrastructure

According to DesInventar, a disaster information management system, almost 4 000 disaster events occurred in Albania between 1852 to 2013. It is estimated that floods (38 percent) have caused the highest economic losses during the period 1990-2014, followed by flash floods (33 percent) and landslides (7 percent).

According to the latest data all over the world the biggest risk is from flooding, and our greatest focus should be there, to adapt climate changes in urban planning. Groundwater flooding results from high groundwater levels, and coastal flooding is due to tidal surges and waves (Saul et al. 2011). Progress has been made in developing realistic simulations of the evacuation processes, using techniques such as agent-based modeling (Dawson et al. 2011) and probabilistic methods (Kolen et al. 2012). Flooding is known to be linked to the outbreak of diseases (Ahern et al., 2005). These diseases range from bacterial outbreaks such as leptospirosis and diarrhea through to vector-borne diseases such as malaria.

Precipitation (mm)	Year 2020	Year 2021	Average ('62-'90)
January	66.9	432.4	154.5
February	93.6	144.2	127.8
March	116.8	132.3	132.7
April	38.3	95.4	121.4
May	23.9	59.5	89.5
June	39.4	21.6	70.4
July	0.3	0.0	35.8
August	105.3	48.6	58.3
September	200.4	11.6	86.5
October	338.8	106.7	141.0
November	0.0	136.5	187.6
December	239.8	226.8	157.3

Table 1 Monthly amount of precipitation in Lezha City, the Year 2020, 2021 and average '62-'90

2. Materials and methods

Distribution in space-time of atmospheric precipitation in the Albanian territory depends on many factors among the most important are the general circulation of air masses, altitude, distance from the coastline, etc. These factors as well as many local factors make the distribution of precipitation in our country to be varied from the northern Alps with annual precipitation of about 3000 mm, to the southeastern areas where it falls on an average of 700 mm. In terms of time distribution of precipitation, the largest amount of them, about 70% is observed in the cold half of the year with a maximum in November and a minimum of precipitation in July . This fact emphasizes quite well the Mediterranean character of our country's climate.

Data of precipitation, gathered from the stations of the Meteorology Department, in the Institute of Geosciences, evaluated with the proper software, homogenized, and filled the full series, in order to compare old averages and actual data, to find out how the precipitation regime is changing. There are two ways in which data are collected. There are two types of stations. The first is a manual pluviometer, which measures the amount of rain. These surveys are carried out once a day on the hour 07:00 and are recorded in registers and diaries which are then sent to the Institute of Geosciences, where they are processed based on WMO methodologies and standards. The second is the digital pluviometer which has sensors and gives the data in real-time in the servers of the Institute of Geosciences.

3. Results and Discussions

Lezha is part of the Mediterranean Climatic Zone, and part of Central Mediterranean lain subzone, and the northern hilly Mediterranean subzone as shown in the map below:

To make an assessment of the amount of precipitation over the city of Lezha during 2020 and 2021, there has been taken in consideration the amount of precipitation measured by the meteorological monitoring stations in comparison with the multi-year average, and we notice that we have deviations in the amount of precipitation, as shown in the table and graph below.

As seen in the graph above the precipitation regime has changed during these 2 last years. In January 2021 when there was a big flood in Albania, in Lezha there was 432.4 mm of rain, while in normal years we had 154.5, which means around 278% of the amount. Even other months in the winter are above the average and the months in the summer are less the amount. After analyzing the data about the precipitation these two last years it is noticed that the problem of flooding is partly from the change of the precipitation regime

The main problem of flooding in the city comes as a result of the addition of buildings within the neighborhoods of the city, without changing the infrastructure. Following the problem typologies which are mainly due to large areas of concrete or similar non-permeable materials, combined with dense buildings and with

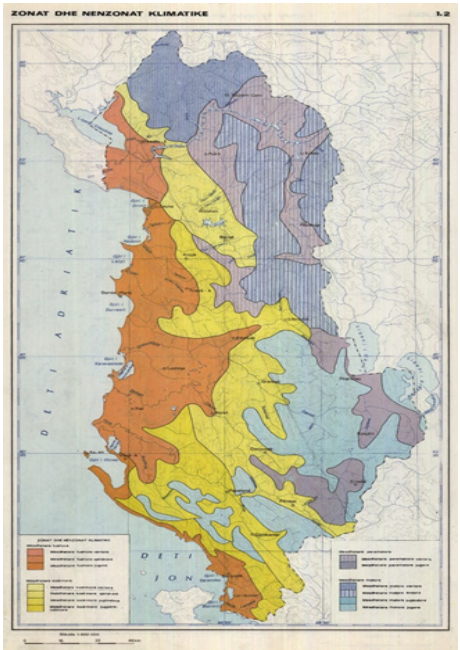

Fig.2 / Climatic zones and subzones in Albania

Fig.3 / A part of the city with proposals

the lack of proper drainage road system or proper maintenance, two alternatives are seen as a solution to these problems. This is a map of Lezha City and there are identified the buildings. In the red circle is the part of the city that is being analyzed, zoomed in, in the second figure. Green is the concreted space to turn into green space.
With yellow are the spaces seen where is necessary the intervention in the drainage system of the roads.

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5

Proposals for innovative housing models that reflect the needs of contemporary society.

Evaluation of indoor air pollutants and new buildings' solutions to reduce them: literature review and fundamentals.

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Abstract- *During the past few decades various symptoms and illnesses have been increasingly attributed to nonindustrial indoor environments. In general, indoor exposure to noxious chemical, physical, and biological hazards occur at low levels, however, such indoors exposition are very common (Seltzer, 1994: pp. 318-326). Symptoms such as drowsiness, headache, fatigue, burning eyes and breathing difficulties are signs that could indicate a high percentage of pollutants in the indoor environment, although we often tend to attribute them to other causes. This phenomenon which causes disease is called - sick building syndrome - (SBS) and it is a growing problem (Carrie A Redlich, 1997: pp. 1013-1016). SBS has been reported with increasing frequency since the 1970s, as older, naturally ventilated buildings have been replaced by more energy efficient, "airtight" buildings. SBS was frequently associated with workplaces, where the employees work together and spend most of their time. However, in this pandemic and post-pandemic situation, the smart working, and the greater crowding of living spaces, could cause this problem to arise even in private homes. Now, in the framework of COVID, it has become even more necessary to look closely at the quality of the air in homes. Indeed we spend more and more time inside enclosed and shared places, where the air can be much more polluted than outside. At home and office, we are surrounded, and we daily breathe dangerous but invisible substances, which penetrate our body without being noticed. In order to propose the best house's construction and rebuilding solutions, this review considers the contamination sources that can cause diseases in the house's environment. The innovative approach, based on the complexity of the problem, it focuses attention about the different factors in order to reduce the indoor air pollutions. Finally, having identified the factors that play a significant role in environmental indoor house's contamination, a clear picture should emerge to draw conclusions and propose the best buildings solutions. Based on the complexity of the problem and the need for interdisciplinary research.*

Keywords: Pollution - SBS (sick building syndrome) - House environment - Biomaterials - Ventilation system – IAP (indoor air pollution)

Introduction- In the last ten years, the research about the air's quality began to move from external to internal specs, reflecting the people's life styles changes. Nowadays people pass over the 90% of the time in indoor environment (Ekmekcioglu D., 2007: pp. 169–176); (Leech J.A., 2002: pp. 427–432). It whose showed that the reduction of the air quality (IAQ) can affect negatively on human's health, causing illnesses associated to the building. According to the latest World Health Organization (WHO) report, 8 million people die every year globally because of air pollution. Among these, 4.3 million die because of air pollution from household sources and 3.7 million die because of Indoor Air Pollution (IAP) (WHO, 2020). COVID-19 pandemic in this last year's increase this picture, indeed air quality appears to be a critical environmental factor in the COVID-19 pandemic (Conticini et al., 2020: pp. 261). The development of technologies to mitigate indoor air pollution

is important to avoid adverse effects. In this document we give an overview of the principal sources of particular matter (PM) and volatile organic compounds (VOCs), in the developed countries', finally we show the better and trendy strategies to the control and reduce the indoor pollutant concentration in indoor environment. pp. 276-281). The semiconductor material TiO2 can be added to dry concrete or directly to binder in proportions from 0.1% to 5%, allowing, in any case to maintain the esthetic and mechanic characteristics of the concrete. The photocatalytic concrete can be used for concrete flooring, masonry coverings and houses 'walls. Indeed, this technology can be used also for coverings tiles and photocatalytic glass (Fig. 1).

Objectives and Methodology

This document aims to identify what are the new engineering and architectural solutions to reduce pollution inside homes. The scientific relevance of this review is to identify different aspects of the problem and solutions that are often studied separately. The methodology used to choose scientific evidence concerns the following aspects:

- Identify keywords and concepts to research
- Identify research databases based on objective quality criteria (impact factors, accredited scientific journals and peer-reviewed articles)
- Based on these standards, find the relevant references
- classify references for relevance and appropriateness
- Consult, read and select the references
- Rearrange references after reading compare the material and write the text.

Particulate Matters (PM) and volatile organic compounds (VOCs) emission sources in house environment

There are at least sixty sources of household air pollution, and these vary from country to country. Indoor air pollution with toxic volatile organic compounds (VOCs) and fine particulate matter (PM2.5) is a threat to human health, causing cancer, leukemia, fetal malformation, and abortion. PM and VOCs are solid or gaseous polluting substances, created by the presences of people (CO2, and corporal secretions) combustion's processes (tobacco smoke, cooking food), building and furnishing materials and chemicals products used for the sanitization. PM is defined as carbonaceous particles in association with adsorbed organic chemicals and reactive metals. PM's main components are sulfates, nitrates, endotoxin, polycyclic aromatic hydrocarbons, and heavy metals (iron, nickel, copper, zinc, and vanadium) (Hamanaka R.B., 2018: pag. 680). Depending on the particle size, PM generally is classified into coarse particles, PM10 of diameter <10 μm; fine particles, PM2.5 of diameter <2.5 μm; and ultrafine particles, PM0.1 of diameter <0.1 μm. Compared with PM10 and PM2.5, PM0.1 created by fossil fuel combustion represents a greater threat to health due to its penetrability into the small airways as well as alveoli (Miller M.R., 2012: pp. 577-602) (Brook R.D., 2010: pp. 2331–2378).

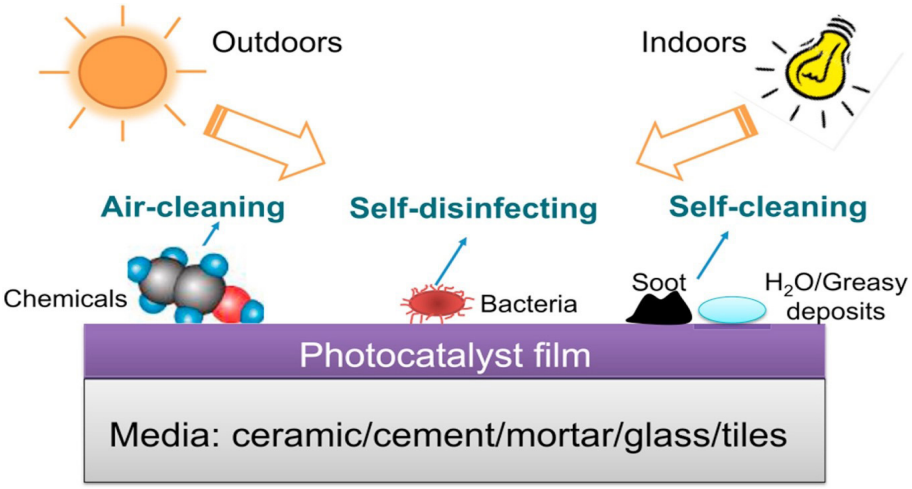

Fig.1/ Schematic diagram of multi-functional photocatalytic building materials.
Sourse/ Lexuan Zhong, Fariborz Haghighat, Photocatalytic air cleaners and materials technologies – Abilities and limitations, Building and Environment, Volume 91, 2015, Pages 191-203

Sometimes called oil-based or petroleum-based solvents, many VOCs are included in paints and cleaning products to dissolve or dilute the other ingredients. Flat (or matte) paints with fewer than 50 grams of VOCs per liter are generally considered to be low-VOC, while a zero-VOC paint is one with fewer than 5 grams per liter. Nonflat paints (such as satin and semi-gloss) are considered low-VOC if they have fewer than 100 grams of VOCs per liter.
Another VOC indoor emission source is glue, most of the synthetic adhesive are volatile organic compounds. Adhesive application in indoor decoration is an important anthropogenic volatile organic compound emission indoors source. Studies have been conducted on VOC emission factors and characteristics from indoor decorating adhesives. In this study (Gao M. et al., 2021: pag. 779), the VOC emission factors were obtained by measurement of VOCs in 210 adhesives. The results showed that the VOC emission factors were 41.23 g/L for wall and ground solidify, 33.49 g/L for tile adhesive, 76.88 g/L for white glue, 52.36 g/L for wallcovering adhesive, 132.28 g/L for sealant glue, 49.33 g/kg for foaming adhesive, 654.23 g/L for all-purpose adhesive and 152.01 g/L for marble glue. A new trend towards replacing the current chemical adhesives with bio-based adhesives for commercial interest is taking place accelerated by international legislation mainly in the US and EU that reduces the use of toxic materials in the building industries (Mathias G. I. et al, 2016: pag 104-116). These demands for green adhesive materials and sealant market is projected to reach USD 73.8 billion in 2024 compared to the global market of a few billions in 2019 (Rearch and Market, 2019).

Mitigation of indoor's air pollution
To reduce indoor air's pollution, we can adopt some strategies: some of them connected to the use of new materials, others bound to new architectural and engineering solution. We will consider the mine strategies:

Photocatalytic materials
In order to reduce the air pollution we can use self-cleaning paints and material. Adsorption and photocatalytic oxidation are the current approaches for the removal of VOCs and PM2.5 with high efficiency (Yue X., 2021: p. 124138). Catalytic technology for indoor air pollution treatment has the advantages of high elimination efficiency, low oxidation temperature, wide application range, simple equipment, and no secondary pollution (Weon et al., 2019: pp. 3185-3214). The principle behind is a photosensitive semiconductor material (e.g. TiO2) which is excited to emit electron-hole pairs under the irradiation of light of a certain wavelength that in turn converts O2 and H2O into radicals with strong oxidizing properties (Weon et al., 2019: pp. 3185-3214). Subsequently, the generated radicals cause the decomposition of VOCs. Indeed thanks to the photocatalysis, the damaging substances on materials and in the air, such as nitric oxide (NOx), or particulate matter (PM10) and VOC (Volatile Organic Compound), are easily transformed in inorganic and harmless

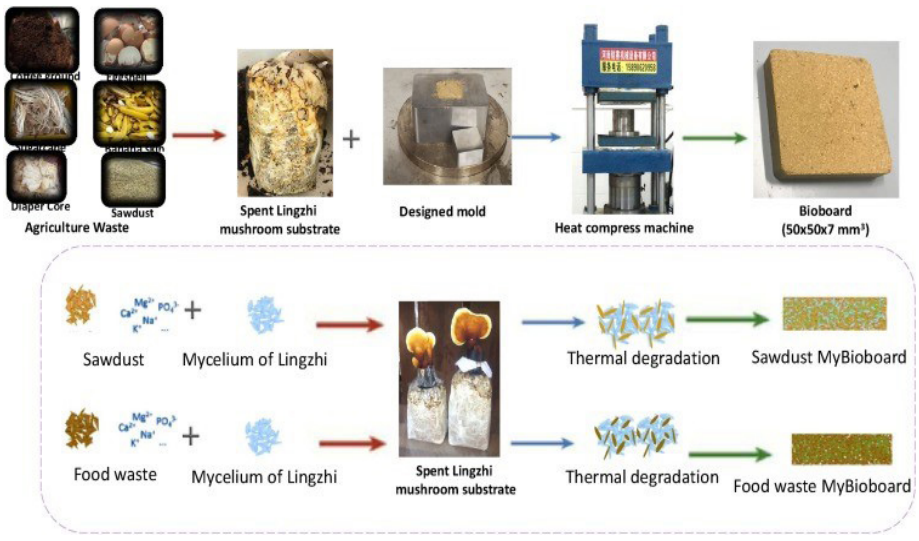

Fig.2 /The schematic overview of the Bio-board production from recycle of spent mushroom substrate (Shing Ching Khoo, et al, Volume 400, 2020, pp. 123-296.)

salts, as sodium nitrates (NaNO3), sodium carbonate (CaNO3) and limestone (CaCO3), these are substances similar to water. Studies results show that the maximum decomposition efficiency of formaldehyde is 73% and that immobilization of ZnO nanoparticles has a synergistic effect on photocatalytic degradation (Zhu et al, 2015: pp. 276-281). Il semiconductor material TiO2 can be added to dry concrete or directly to binder in proportions from 0.1% to 5%, allowing, in any case to maintain the esthetic and mechanic characteristics of the concrete. The photocatalytic contrite can be used for concrete flooring, masonry coverings and houses' walls. Indeed, this tecnology can be used also for coverings tiles and photocatalytic gals (Fig. 1).

Natural material - Sheep wool panels -
It is well known that wool carpets and upholstery permanently remove many gaseous pollutants from the air, thus improving indoor air quality, and peoples' wellbeing , this keratinous materials can absorb toxic substances such as heavy-metal ions, formaldehyde and other hazardous VOCs (volatile organic compounds), applications can also be envisaged in air cleaning (Aluigi A. 2009: pp. 311-319). For example, sheep wool is a natural material, already used for thermal insulation, in the form of soft mats or panels. The chemical composition of sheep wool is approximately 82% keratin, 17% non-keratin proteins and about 1% lipids and polysaccharides. Thanks to its high protein content, wool is able to absorb and neutralize particulate matter, heavy metals, and other hazardous gases such as nitrogen oxides, sulfur oxides and VOCs (volatile Organic Compounds) such as formaldehyde (Bosia D., 2015: pp. 315-320). In the last period are designing acoustic filtering panels for the walls' insulation, that have a high surface area of diffusion. In this panel the air can be forced to pass and can be easily recycled. The wool-based passive filters can significantly improve indoor air quality and represent a new use for wool.

Natural material - Mushroom panels -
Synthetic adhesives in the plywood industry are usually volatile compounds such as formaldehyde-based chemical which are costly and hazardous to health and the environment. This phenomenon promotes an interest in developing bio-boards without synthetic adhesives. Recent studies have proposed a novel application of natural mycelium produced during mushroom cultivation as a natural bioadhesive material that converts spent mushroom substrate into high performance bio-board material (Shing C. K. et al., 2020: pp. 123-296) (Fig. 2). This new material application is an indirect solution to reduce VOCs indoors environments.

Conclusions
Of 31 studies identified in the search, 17 met pre-specified inclusion and exclusion criteria. The compartmentation more present in the modern buildings and the increase of the time that the person spend indoor, has brought indoor air's quality problems. Ventilations systems that use filters for the particulate and

polluting substances, are surely effective to reduce the indoor air, bat in this review most recent and innovative solutions to reduce VOCs are evaluated. Alternative solutions are possible: some are in the implementation phase, other have already been present on the market. Different types of solutions are proposed in the examined studies, in any case the union of different technologies as the use of photocatalytic materials for coatings and floors, filter panels and the installation of green-walls, give an high contribution to improve the indoor air's quality.

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Beyond boundaries. Exploring new post pandemic housing models through the reformulation of collective spaces.

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Abstract- *The outbreak of the pandemic COVID-19 has profoundly impacted the world where we live in. Especially in the urban and architectural fields, it has posed the necessity to define new housing models, capable of responding to both ambitions and needs of the upcoming post-pandemic society. In particular, two different types of necessities have risen: social issues (the necessity of more spaces for recreation, working, exercising, ...) and environmental issues (the reduction of flood risk, urban heat islands, air pollution, ...).*

The argument of this paper is that it is possible to overcome this apparent dualism of targets only through the reformulation of the conventional "living" paradigm, and, specifically, through the extension of the latter beyond the (physical and conceptual) "walls" that traditionally define the idea of housing. For this purpose, the outdoor space, conceived as not a mere addition but as a structural component of the living environment, has been identified as the main field of investigation. The effects of the pandemic situation, indeed, have exacerbated the traditional contraposition between private, semi-private and public realms. However, it is exactly through the exploration of this "friction" that it is possible to generate alternative design pathways for the reconceptualization of the conventional housing models towards a social and more sustainable perspective.

For this reason, taking as a case study the Albanian city of Lezhë and the surrounding region, the paper reflects on the connection between the ground floor spaces of local dwellings and the outdoor areas around them. In particular, two different space typologies have been considered: the "in-between" space, resulting from the aggregation logics driven by the different historical settlements models; and the "residential/outdoor space interface" between private buildings and the adjoining common areas (streets, squares, parks, etc.). For each of these two categories, the paper tries to establish potential design principles, strategies and tools which can embrace the twofold necessity of creating spaces where to integrate the new recreational, social or working activities which have been making their way into the post-pandemic idea of living, but also to give possible answers to the forementioned impending climate issues. In this way, the ultimate goal is to explore how new housing models based on blurring the traditional demarcation between private and public through the reformulation on the outdoor space idea may not only improve liveability and physical and psychological health of individuals, but also entail wider-scale effects, becoming a beacon to ultimately increase identity, social inclusivity, and climate resilience of local communities.

Keywords: post-pandemic society, outdoor spaces, resilience, in-between spaces, residential edges.

Introduction- The pandemic COVID-19 has greatly re-shaped our way to conceive architectural and urban design, exposing in a sudden and virulent way all the limits of current design paradigms to respond to the complexity, dynamicity and often unpredictability of the world we live in (Allam 2020). In particular, this inadequacy appears extremely visible if we assess the main current housing models

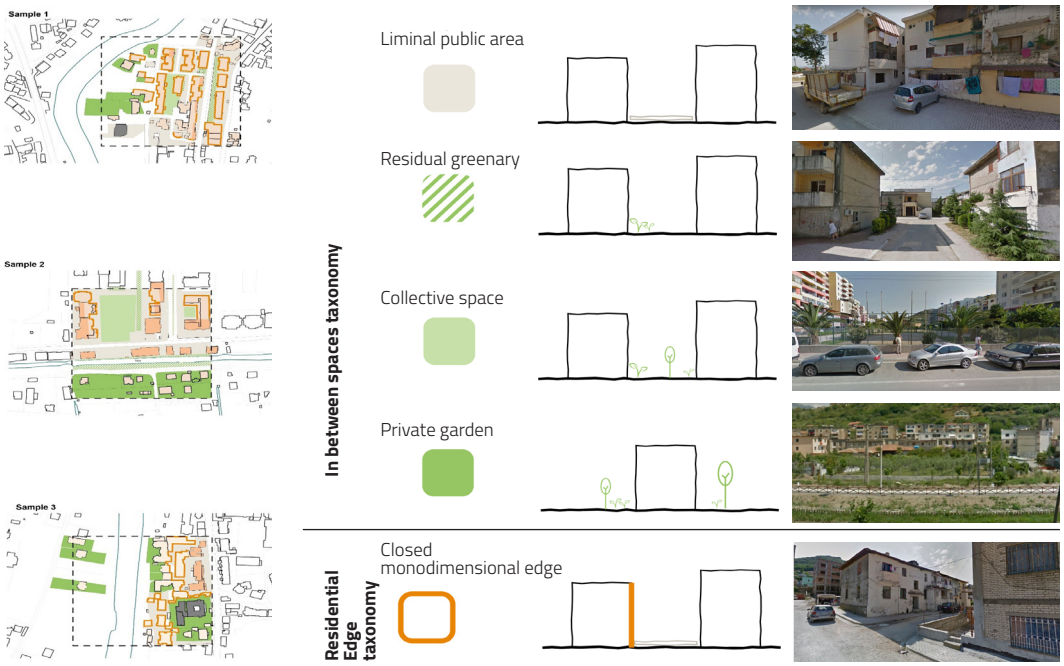


Fig.1/ Mapping of the existing urban spatial categories in Lezhë -The in-between space

and their capability of effectively responding to the needs brought to light by the post-pandemic society (Papu, Pal, 2020; Klochko 2022).

Indeed, on the one hand, the pandemic has exponentially expanded the ambitions of contemporary housing, introducing the necessity to integrate, within the space of traditional dwellings, a new set of functions which go far beyond the classic ones, including exercising, working, creating, meeting, or even gardening and local food production.

On the other one, the pandemic has also exacerbated even more the impacts on our current building stock of worldwide phenomena such as climate change, revealing the intrinsic incapability of existing dwellings of coping with the effects of higher temperatures, extreme rainfalls, drought or see level rise.

The scientific literature has identified in this condition an opportunity to explore new housing models which might be more suitable for the upcoming needs of a post-pandemic society. However, what if we go a step further? What if we take this situation as a chance to challenge the traditional "housing paradigm" itself? In other words, what if we extend the existing idea of "housing" beyond the (physical and abstract) "private walls" that traditionally define it and we include in its reconceptualization also the outdoor space, conceived not as a mere addition but as a structural component of the living environment?

The reformulation of the outdoor space as a tool to address both social and climate change issues in the housing realm

From the ancient times, outdoor spaces represented the most important sites where political, economic and cultural activities used to take place, or, in other words, where "urban life" used to happen (Wilkinson 1988). Also in terms of urban planning, their importance was soon discovered as they were recognised as a resourceful tool only to create space of social interaction and representation, but also to guarantee healthy living conditions (Duhl, Sanchez 1999). In particular, during the XIX cent., the redesign of outdoor spaces was of fundamental importance to address both social and health issues as overcrowding, disease and crime in the densely built new suburbs generated as a consequence of the Industrial Revolution. The widening of streets and the implementation of new green spaces and squares were some of the principal interventions envisioned by Haussman in his well-known model aimed at beautifying Paris but also, and above all, to remediate the poor conditions of many districts of the city (Hall 2014). Similarly, in U.K. outdoors spaces were identified as a primary tool to face the deteriorating living conditions in the uprising English industrial towns, from the earliest attempts to introduce, through a sequence of Public Health Acts, the first publicly accessible parks in the urban framework (as the ones realized in London and Liverpool in the mid. XIX cent.) till the more extreme approach of the "garden city" lately proposed by Howard (Wilkinson 1988, Worpole 2000). Again in the XX cent., much part of the Modernist movement stressed

once more the importance of sufficient light, ventilation, hygiene and safety as essential premises of the modern city and recognized, even if through the lens of its specific design assumptions, outdoor spaces as key elements to achieve this purpose (Worpole 2000). However, with the establishment of car-oriented city models in the same period, outdoor spaces and particularly streets were also progressively engineered to provide more space for motorized vehicles and optimize automobile circulation, introducing, in this way, a different conceptualization of the collective domain often colliding with its former uses (Brown 2009).

In recent times, though, many alterative design concepts have been developing, claiming the necessity to regain the outdoor space as a space for people rather than car (Gössling 2020). Design experimentations such as the "15-Minute city" of Paris, the "1-minute city" of Sweden or the "Superblocks" in Barcelona have already proved the possibilities unfolded by such approaches to create additional value and define new social, cultural and economic opportunities in the urban environment. Therefore, in the aftermath of the COVID-19 pandemic, these concepts can represent a fundamental starting point for providing an answer to the always more challenging task posed by the post-pandemic society of integrating new activities and needs within existing dwelling's conceptual domain (Moreno ed al. 2022, Sisson, 2020).

Especially in densely built urban environments, where most of current housing models are based on an almost extreme contraction of the living space, the overcoming of the traditional hard dwelling's boundaries (or, in other words, the traditional clear separation between public and private realms) and recognition of the outdoor space as an active part of the housing environment can become for the solution to define new housing models more in line with the needs and ambition of the contemporary society.

At the same time, recent studies have also showed how outdoor spaces can potentially turn into an essential tool to address climate change impacts (Matos 2016). In particular, outdoor spaces have proved to be an extremely effective resource for the implementation of both green or architectural and urban systems which can actively interact with the surrounding environment and contribute to providing shadows and cooling during heath waves and hot temperatures, storing water in anticipation of dry periods, reducing and delaying water runoff during

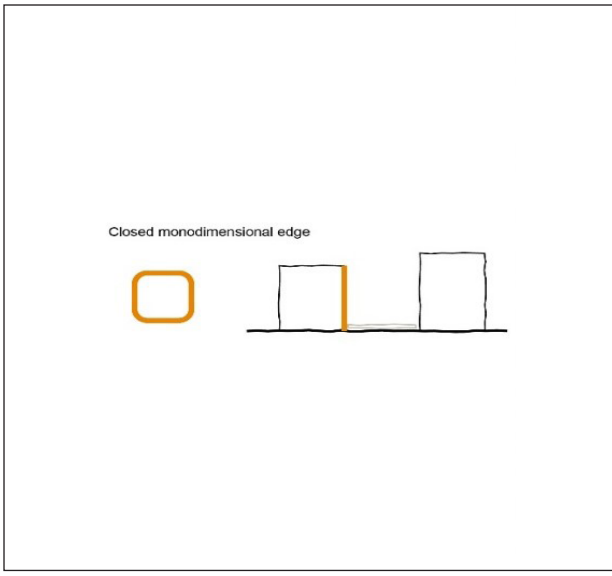
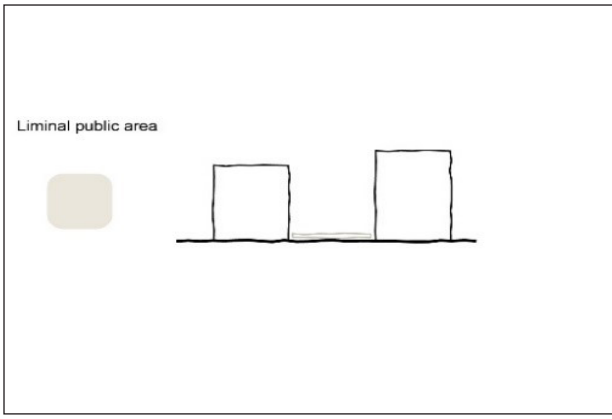
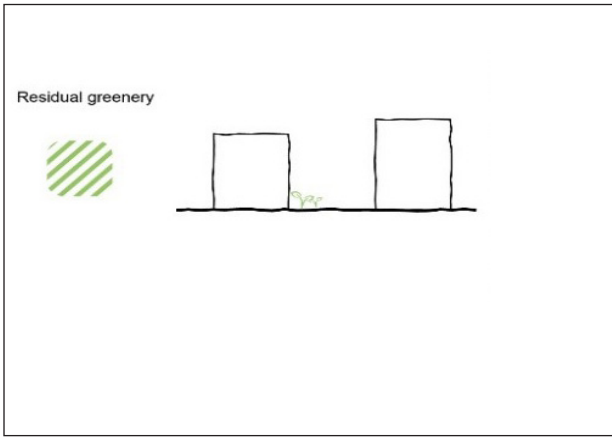


Fig. 2b / Proposed interventions for the residential/ outdoor space interface.





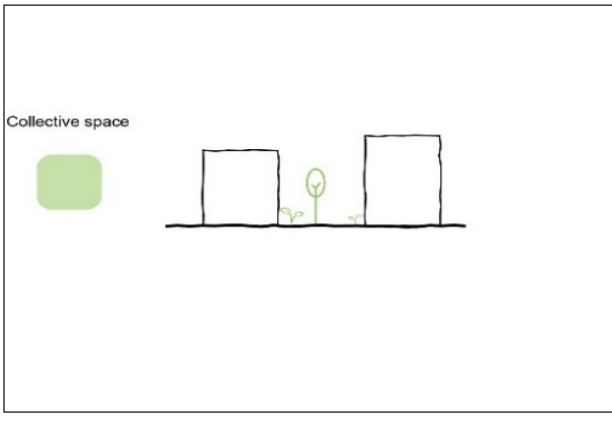
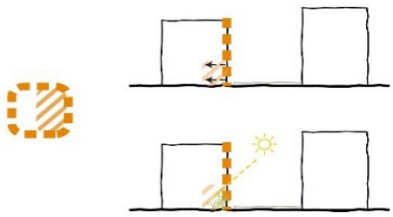
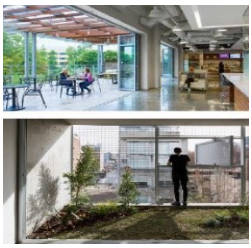


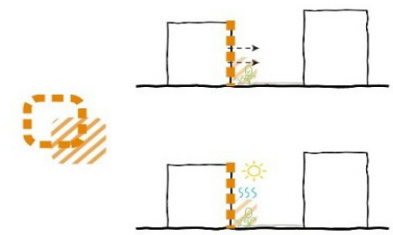
Fig.2a/ Proposed interventions for in-between spaces. The residential/outdoor space interface



Social effects:
-Increase of open/semi-open residential space (loggias, small green houses, ...)
-stronger visual connection with the street
-creation of extra activities (sport, relax, playground,...)

Environmental effects:
-possibility to integrate more greenery also in indoor spaces
- increase of lighting

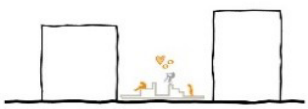




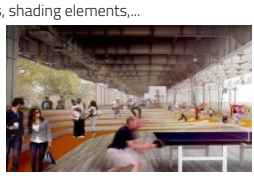
Social effects:
-Increase of street quality (more attractive and lively space)
-increase of potential interactions among neighborhoods
-extension of the house activities also outside and creation of extra ones (sport, relax, gardening, playgrounds,...)

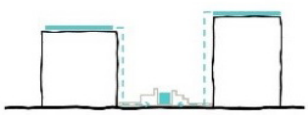
Environmental effects:
-possibility to integrate more greenery and reduce housing heat stress

Proposal / A. Implementation of site-specific designed urban furniture / through sitting elements, kids playing items, shading elements,...



Social effects:
- Improvement of outdoor space
- promotion of social interactions among local inhabitants
- creation of axtra activities that can be carried out outdoor (sport, relax, playgrounds,...)
- one minute city concept

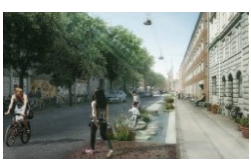


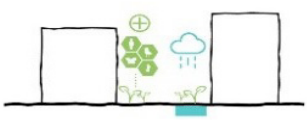


Environmental effects:
-possibility to integrate and increase water storage spaces in the built-up areas

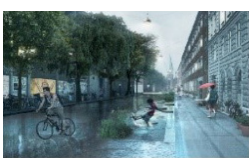
Proposal / B. Enhancement and implementation of green buffers / through the reconversion of residual green into new natural areas, community gardens, educational gardens,...

Social effects:
- Improvement of outdoor space
- promotion of social activities (vegetables and fruits gardens, educational gardens for kids)
- Increase of the sense of community
- Increase perception of an healthier and more sustainable environment





Environmental effects:
-increase of rainwater infiltration capacty (e/g. creation of bioswales)
-increase of biodiversity
-increase of greenery and consequent cooling effect during hot waves



Proposal / C. Enhancement of the collective space with green features and extra activities / such as rain gardens, water squares, permeable green surface, neighbourhood facilities, ...

Social effects:
- Improvement of outdoor space
- promotion of social activities (vegetables and fruits gardens, educational gardens for kids)
- promotion of social interactions among local inhabitants
- increase of the sense of community

Environmental effects:
-reduction of impermable surfaces and increase of rainwater infiltration capacity
-creation of rainwater gardens for water storage
-increase of greenery and consequent cooling effect during hot waves

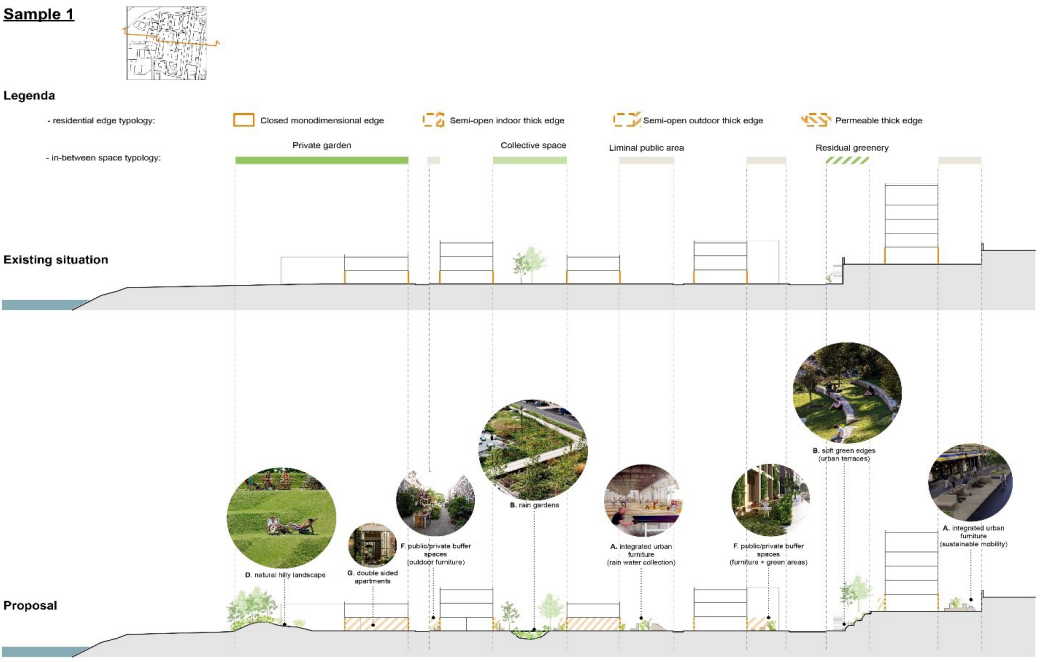


Fig. 3 a/ Principal section 1

heavy rainfalls or buffering and reducing the impacts of storm surges in case of flooding (Matos 2018, World Bank 2018).
In light of these preliminary considerations, the main challenge in the reformulation of the existing housing models through outdoor spaces is, therefore, to rethink the relationship between these two terms and, in doing so, to develop design principles capable of addressing both social and environmental issues.

Design principles for the city of Lezhë

In order to test the assumptions outlined in the previous paragraph, the Albanian city of Lezhë has been chosen as a case study. Indeed, despite its own specific characteristics, Lezhë shares several morphological, typological and historical urban features with many other Albanian cities, and, for this reason, it represents an ideal framework where to define design principles conceived to have a much wider potential of future implementation in different contexts. In particular, the urban fabric of the city and its current housing models have been categorized according to three main development phases - before communism, during communism and after communism – (Thomaj et al 2021) and three samples of the urban fabric have been identified for further investigation. For each of these samples the relationship between existing housing models and outdoor spaces has been analysed. As a result, two spatial urban categories have been identified as a potential experimentation field (fig.1):
- the in-between space
- the residential/outdoor space interface

and, for each of these categories, different design solutions have been developed, always through the twofold perspective of combining the technical requirements of climate-adapted urban spaces with the people´s desire for more and more attractive places where to carry out everyday activities in a post-pandemic era. With this definition, we intend the spaces often resulting from the overlay of diverse (and often informal) aggregation logics specific of each historical development phase of the city. Despite the intrinsic variety of these spaces, they are often deemed as a "residual" or "undetermined" ones, many times even perceived as unsafe or reason of further urban decay in residential neighbourhoods. Nevertheless, we recognized them as a great opportunity to implement social-oriented and climate-adaptive solutions in the city of Lezhë, and, for this reason, three main intervention fields have been identified (fig. 2a):
- liminal public spaces: these are the spaces between building blocks, mostly of public ownership and mainly identified with the streetscape. These areas are often downgraded to mere circulation spaces, either vehicular or cyclo-pedestrian. However, following the lesson of the already mentioned "Superblocks" project in Barcelona or other initiatives such as the "Piazze Aperte" in Milan, retrieving the historical idea of the street as a "space where things happen" is not only possible, but it becomes a tool to give an answer to the residents' need of social interaction, accessible and nearby recreational spaces and, in general, of a greener, healthier, and safer neighbourhood. In these terms,

Fig.3. b/ Principal section,

urban furniture plays a fundamental role: on the one hand the implementation of a rich and broad variety of street furniture (seating elements, playgrounds, planters, art installations…) represents a chance to stimulate a wider range of activities (playing, relaxing, mingling, training, sharing, …) often impossible to be carried out within the boundaries of conventional dwellings. On the other hand, street furniture can also turn out to be an effective way to cope with some consequences of climate change. In this regard, the design of the ZOHO Rain Letter installation in Rotterdam by Studio Bas Sala offers a useful example: this art installation, indeed, is conceived to strengthen the identity of the area (ZOHO stands for "Zomerhofkwartier", the district where it is located) and foster community building in a complex and multi-ethnic neighbourhood; at the same time, though, it also works as a smart rainwater barrel capable of harvesting water during intense rainfalls (preventing also the local the sewage system to collapse) and storing it in anticipation of dry periods.

- residual green: it is the green often located in left-over areas of the city of Lezhë, along the streets, in the corners of the building, in the intersection of roads, … Rather than wasted, disconnected areas, however, these green spaces can actually be interpreted as a resource for the residential environment: if preserved and even implemented into a consistent system in the built context of Lezhë, they can actually be an undeniable reserve of biodiversity (Baldock 2019), becoming urban ecological corridors, as well as effective tools to accommodate water during extreme climate events or cooling during hot summers. At the same time, from a social perspective, the reconsideration of residual green as a design factor can improve the streetscape appearance and, in this way, invite residents to take care of it, triggering even the creation of new, cohesive and social activities (Thompson 2018). An example of this principle can be found in the "Street Edge Alternatives" (SEA, 2001) pilot project in Seattle, Washington, where green along the street profiles of the Piper's Creek neighbourhood was reconverted into lush bioretention areas. This intervention, besides improving the general water management system of the area, also created a sense of place and community among the residents as well as arose their environmental awareness, showing their own active role and contribution to managing stormwater and improving the quality of their neighbourhood.

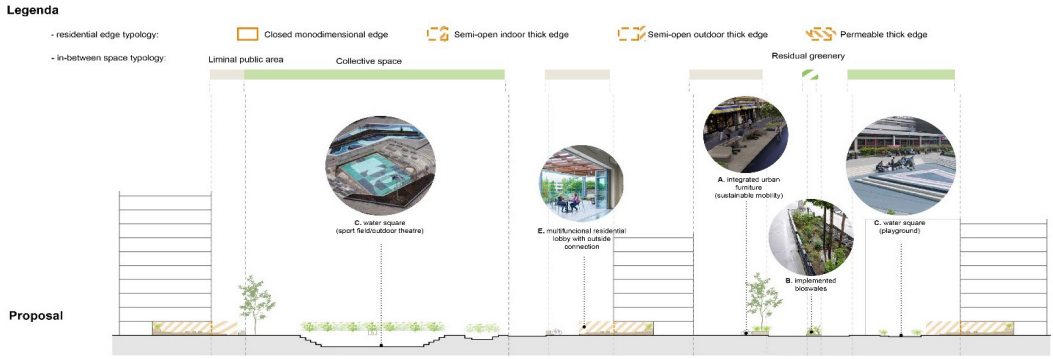
- collective areas: they have been identified, in the three samples, as those spaces already conceived to accommodate collective functions such as private courtyards or public squares but whose social value is not totally exploit yet. In this case, implementing climate-adaptive design solutions can actually become an opportunity to increase their urban quality and uses. The case of the water square in Benthemplein (Rotterdam) well represents this idea: the three lowered basins which constitute the square are designed to store water during heavy rainfalls before it enters the local drainage system, but they also become an opportunity to create

Fig. 3.c / Principal section

more spaces for sports, performance activities, and gathering, realizing, in this way, the desires of the young community living in the neighbourhood.
Additionally, also urban farming can work towards these targets. Especially private courtyards, now mainly paved and underused, can become extremely suitable for shared food gardens: in this way, not only is the risk of pluvial flooding decreased (thanks to the infiltration properties of the soil) or is potential food scarcity threats as well reduced, but also the general lifestyle of locals is improved, providing greater access to fresh and healthier food and, at the same time, promoting interaction among neighbours.
With this second urban category we explore the relationship between private ground floors and the public (or semi-public) space in front of them. In all the three analyzed samples of Lezhë, most of the buildings present a hard separation with the outdoor space in front. The main assumption of this paper, on the contrary, is to reconsider the transition between private houses and outdoor spaces from a nondimensional line to a "thick border", an urban space where social opportunities can rise as well as green and climate solutions can find their space in a very dense urban context (fig 2b). This border can equally develop outward, expanding interior activities towards the public realm, or inwards, welcoming outdoor activities in the traditional dwelling domain, such as in the case of multifunctional lobbies of residential apartment buildings. In regard of the first case, the Dutch city of Delft offers a wide range of examples. Especially in the historical part of the city, indeed, the edge between buildings and outdoor space is often articulated in different forms, such as seating elements, tables, vegetables gardens, etc…As a result, not only do these elements allow to people to carry out a much wider range of activities, but also activate the outdoor space in front and, at the same time, promote interactions among residents. Lastly, as already mentioned, they can often be implemented to mitigate the effects of climate change, creating a more liveable and safer environment (fig. 2b).
In light to the design strategies outlined, some principles sections for each of the three urban samples in Lezhë have been defined, not only to demonstrate the applicability to the solutions identified in the context of the case study, but also to create a coherent system between them, and demonstrate how the benefits of one solution can be exponentially amplified if put into relation with another one (fig. 3a,b,c).

Conclusions

The pandemic has revealed all the limits of existing housing design approaches in offering safe and healthy dwellings which can be also "home" of a wide range of new activities. Many scholars have seen this condition as an urgent call for action targeted to the upgrade of traditional housing models.
The analysis of the case study of Lezhë, however, has showed that before - or better, in conjunction with - this upgrade process, it is necessary also to rethink the traditional relationship between private



dwellings and outdoor space. As described in the paper, indeed, the implementation and reconceptualization of the outdoor space as fundamental part of the housing domain can already provide many answers to the upcoming ambitions of the post-pandemic society, and, at the same time, it can also be a tool to address several of the impending effects of climate change and ultimately, become the trigger of wider regeneration processes capable to expand to the neighbourhood (or even the city) scale.

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Design strategies for residential buildings in the post pandemic era.

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Abstract- *During and after the pandemic the home became the epicenter for many people. Everything happened at home: work, school, exercise, play, and everything in between. Families' priorities and needs have changed in many ways, and how they use their homes is at the top of their list.*

An emerging priority among homeowners is health and wellness. People now not only want their homes to protect their health with great indoor air quality, but they also want adequate space to attend to their daily life activities at home. Furthermore, homeowners now realize their homes must fill many roles. No longer are homes mainly a place to gather and rest, but they must also serve as schools, offices with dedicated workspaces, gyms, outdoor living, and many other spaces. For this, are suggested modular interiors, with more segmented approaches than open floor plans.

This paper will present design strategies for residential buildings, in three scenarios, with different terrain conditions (flat terrain, slightly sloppy terrain, and very sloppy terrain) and low construction intensity, according to the "General Local Plan and Territorial Strategy", in the city of Lezha.

Three different building design typologies (Linear Typologies, Box Massing Typology, Unit House Typology) are chosen as the more suitable to be applied to the different terrain conditions.

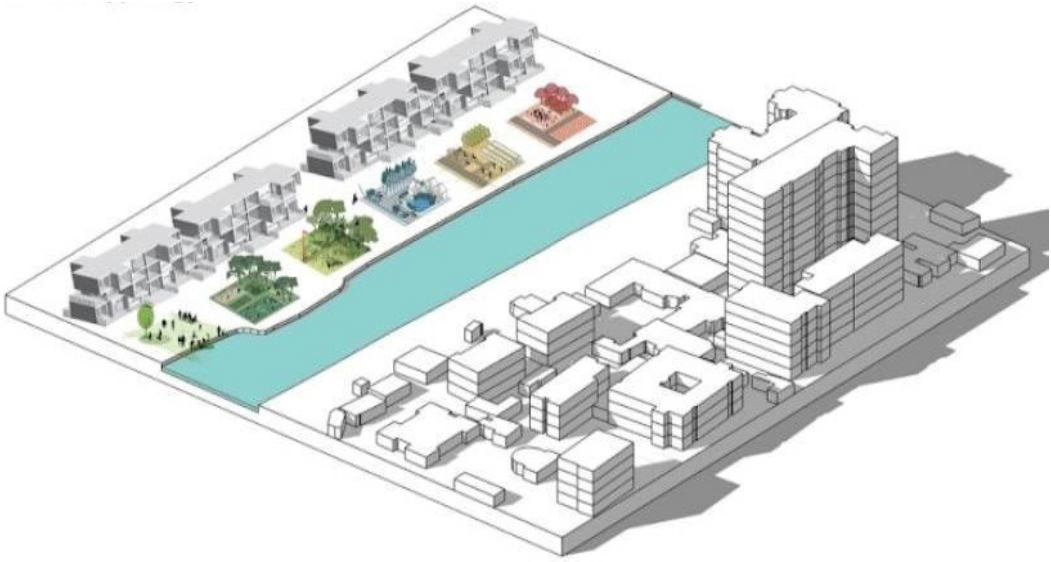
For each, it is going to be presented a conceptual project, based on modular volumes, which integrate into alternative ways, in terms of different crisis conditions such as the pandemic situation. The environmental conditions which have an impact on buildings are variable, but these design strategies are chosen to reduce the negative environmental impact of a built environment by using modular adaptive and repetitive typologies Also, to enhance indoor environmental quality is used natural ventilation.

The three different building typologies are going to be applied in three different terrain conditions:

A - The first scenario is the "Linear typology" in flat terrain; B - The second scenario is the "Box massing typology" in a slightly sloping ground near a hill; C - The third scenario is a "Unit house typology" in very sloping ground.

This study aims to propose new adaptive typologies and establish a set of design standards, taking into account the impact of the pandemic. By examining these strategies, we, designers and architects can understand the defects of the design products in the pre-epidemic period and make good design decisions in the post-epidemic era. The purpose of the study is to propose new residential communities, rather than a single multi-unit house appearing in the city.

Keywords: Pollution - Linear Typology, Box Massing Typology, Unit House Typology, Post Pandemic, Design strategy, Different Terrain Conditions, "General Local Plan and Territorial Strategy".



First s cenario, Linear typology. Reference from: The winning results of the Sydney Affordable Housing Challenge (link in the Webliography).

General description of Lezhe city

The Municipality of Lezha has the "General Local Plan and Territorial Strategy", ready to be implemented. The strategic development of the territory of the municipality (municipality and region), the strategic / priority action plan with capital investments, and pilot development projects propose to increase the intensity of construction. The consolidation and densification of existing urban centers are one of the priority goals. The population is projected to reach 120 000 inhabitants, from nearly 66 000 existing inhabitants.

The primary function of the house, since its creation, has been a hiding place for the bad weather and predatory animals. In post epidemic era, the design of the house must include and provide also social isolation. High-density urbanization will take a step back, and people will tend to relocate to small villages and city suburbs. This paper presents some possible intervention strategies for the post-pandemic society, with specific guidelines for the expansion of new residential areas, and integrating the new activities into the post-pandemic idea of living (recreation, sport, working, social aggregation).

Three different scenarios:

A - The first scenario: "Linear typology" in flat terrain.

In the first scenario, it is presented the "Linear typology". The area is selected in the center of the city, near the river Drin. In the east of the area, there are low-rise and high-rise, multi-story buildings, and in the west, there are practically no buildings. The river divides the area into two different sides. In the area where the land use is very low, will be applied housing densification through linear buildings. Each building will have a public area in front of it, with community open spaces and ecological landscapes. The linear typology is conceptualized with modular volumes interacting in different forms of composition. Each module will satisfy the needs of the new, post-pandemic homes. The home offers a living area, a night area, services, corridors, vertical connections, studio and recreative spaces, and balconies. They are not only apartments but homes, with more space for the living area, a terrace, office space, and recreation activities. Natural ventilation is projected in two dimensions: inter-structural for the building and interior for the home as a unit.

B- The second scenario: "Box massing typology" in a slightly sloping ground near a hill.

For the second scenario, it is chosen an area near the hill of the city castle. The terrain is slightly sloping. The slope comes from west to east, increasing. The existing buildings are of different heights: from one floor to five floors, and of different typologies: public, institutional and residential buildings. The "Box massing typology" is presented in the area where the terrain begins to take the slope. The background of the building which is proposed will be the terrain of the hill. The box massing volume is differentiated to create full and empty spaces, to let "nature come in". This logic can be applied in ways that generate different articulations of volume composition. The module can

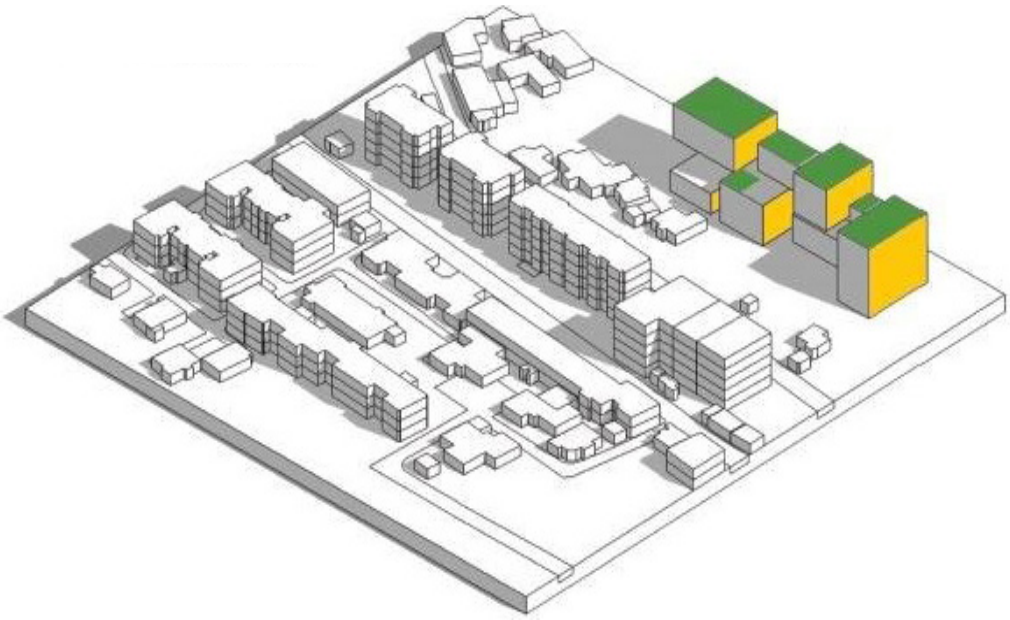


Fig. 2/ Second scenario, Box massing typology. Reference from: Formzero studio, Project: "Networked gardens" (link in the Webliography).

be repeated and modified according to the needs of the people. The massing breakdown is a design instrument used for garden infill to create a green vertical network. Also in this typology, natural ventilation is projected in two dimensions: inter-structural for the building and interior for the home as a unit.

C-The third scenario: "Unit house typology" in very sloping ground.

The third area is chosen in a terrain with a great slope, near the port of Shengjin. The whole area has a low construction density. Most of the existing buildings are military service buildings. They have a low height, one to two floors. There are many options to select the areas for construction infill. The typology proposed for the area is "Unit house typology". Single modular homes can be applied in this typical slope terrain. The unit house offers a terrace, the day area, followed by the night area. Also in this typology, natural ventilation is projected in two dimensions: inter-structural for the building and interior for the home as a unit.

Conclusions

As we figured out some guidelines for the expansion of new residential areas, according to the proposed "General Local Plan and Territorial Strategy" for Lezha Municipality, and also the new conditions of living in the house, after the pandemic crisis, it is evident that in every terrain condition, it is possible to realize construction infilling. Environmental sustainability can be enhanced by using modular adaptive and repetitive typologies and also indoor natural ventilation. Modular buildings can be suitable in each of the three types of buildings: linear buildings, box massing buildings, and unit house buildings. The home, as a unit, should and can be modifiable and adaptive, to satisfy the new needs of the inhabitants and the different needs of social life, in the times of the post-pandemic crisis with higher environmental performance.

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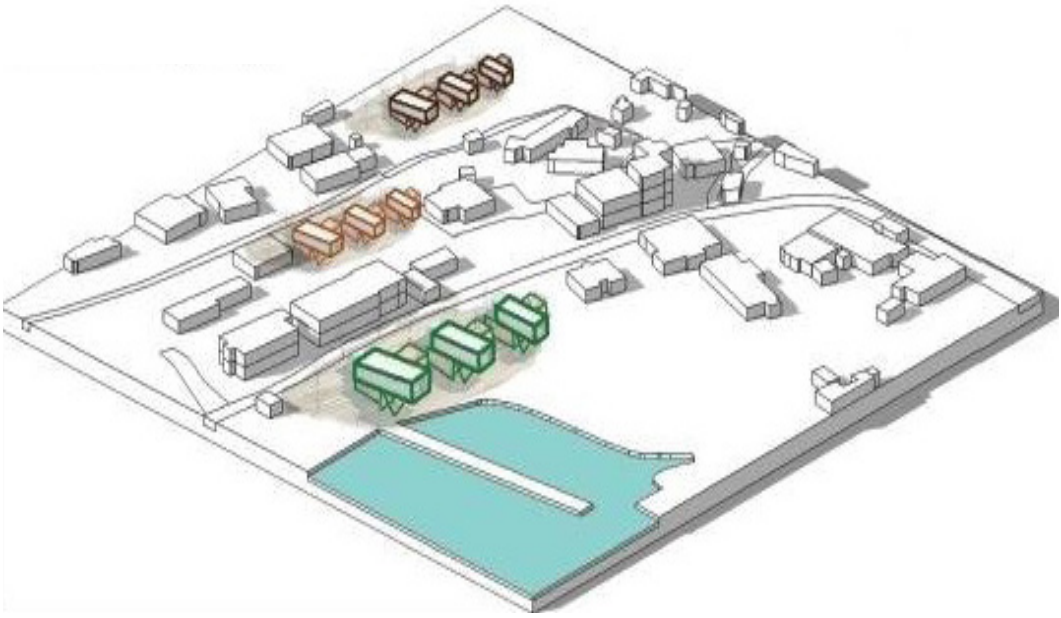

Fig. 3/ Third s cenario, Unit house typology. Reference from: Villa Allende, Argentina. Architect: Andres Alonso Arquitecto (link in the Webliography).

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Shëngjin Marina Development

WideLine s.r.l, Metropolis-

Abstract- *The National Territorial Plan foresees Lezha as a gateway city, which in close interaction with Shëngjin will play a crucial role in Albanias economic growth. In Shëngjini, apart from the existing port infrastructure, another marina is places to serve the touristic purpose and further support the local touristic vision of the city. The proposed project site fits within NTP proposals. The area in which the project will take place is also part of the Integrated Projections of the National Territorial Plan of the Cross Sectorial Plan for the Coastal Zone, drafted by the National Agency municipality of Lezha, in the structural unit with code for Territorial Planning, PINS-BREGDETI, approved on 07/03/2014 by the SHGJ-IN-001 where the study area lies, provides for the National Council of the Territory.*
The purpose of this planning process is:
to identify the natural and added values of the Coastal Belt,
to create an action strategy, which will determine the most appropriate way of development, with a special focus on ecosystem care.
Projections of the National Territorial Plan of the municipality of Lezha, in the structural unit with code SHGJ-IN-001 where the study area lies, provides for the use of S4 land, hotel and any kind of development that promotes the growth of tourism. The development indicators capture maximum and minimum values such as: Intensity for construction max: 0.8; KSHT max: 50% and KSHP: 15%.

Keywords: port, project design, resilience, residential edges.

Introduction- *The property in development, is a natural terrain by the sea, the terrain starts relatively flat and it rises immediately with an accidental massive rock system and continues in the form of a hill covered by high vegetation. The development of the surrounding area is characterized by the port 'Shengjin' which is located at the east side of the property and has a special importance as it is the only port in the northern part of the Republic of Albania. In the west, there are a series of different businesses and activities where they mainly have a hotel character.*

The Marina development includes four main functional areas:
- The Harbour area, with the infrastructures located along the marina waterfront and a series of services mainly dedicated to the needs of yachtsmen and shipowners;
- A Hotel complex, consisting of a main building and a number of complementary buildings, service facilities, and outdoor circulation spaces;
- The Beach waterfront, including a large swimming pool area and an artificial beach, with related services and facilities.
- The Residential area

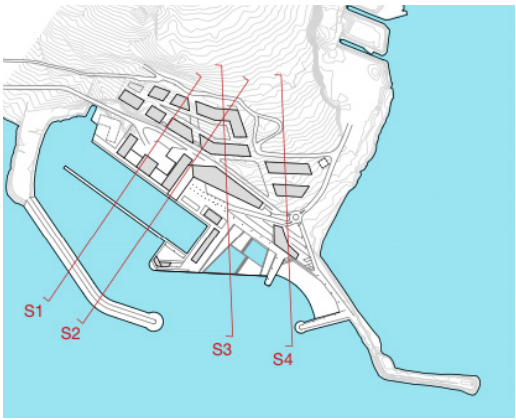
Fig.1/ 3D render of the project. Source/ Author

Fig.2/ 3D render of the project. Source/ Author

TECHNICAL SPECIFICATIONS
The project site is mainly exposed to SW waves and prevailing wind condition is ENE. Maximum significant wave height reported in the last 40 years offshore Shëngjin is 3.5 m (in deep water)
Maximum wind speed (geostrophic) reported in the same period is in the order of 50 Kn(NE)
Local phenomena, such as thunderstorms and tornados, are not taken into account.

After a short stretch, a roundabout allows you to head in three directions:
- The first exit leads to the road that runs along the north side of the hotel and the residential area, then rejoins the road that leads to the beaches west of Shengjin.
- The second exit leads to the interior of the Marina
- The third exit leads to the new beach to the east of the complex.

The marina can accommodate 100 boats, ranging from 8 to 40 m length.
Water depth inside the port basin is -3.5 m m.s.l.
The central square is the heart of the complex; all the pedestrian paths that connect the different areas and services start from here, in particular:
▪ The Hotel which can be accessed both from the main entrance under the Loggia and from the south side where the covered spaces of the internal restaurant overlook;
▪ The Convention Center, whose entrance is on the opposite side of the main entrance of the hotel, and the restaurant overlooking the water- WDL
front, both located in the two-level building parallel to the Loggia;
▪ The Quay area and the external pier.



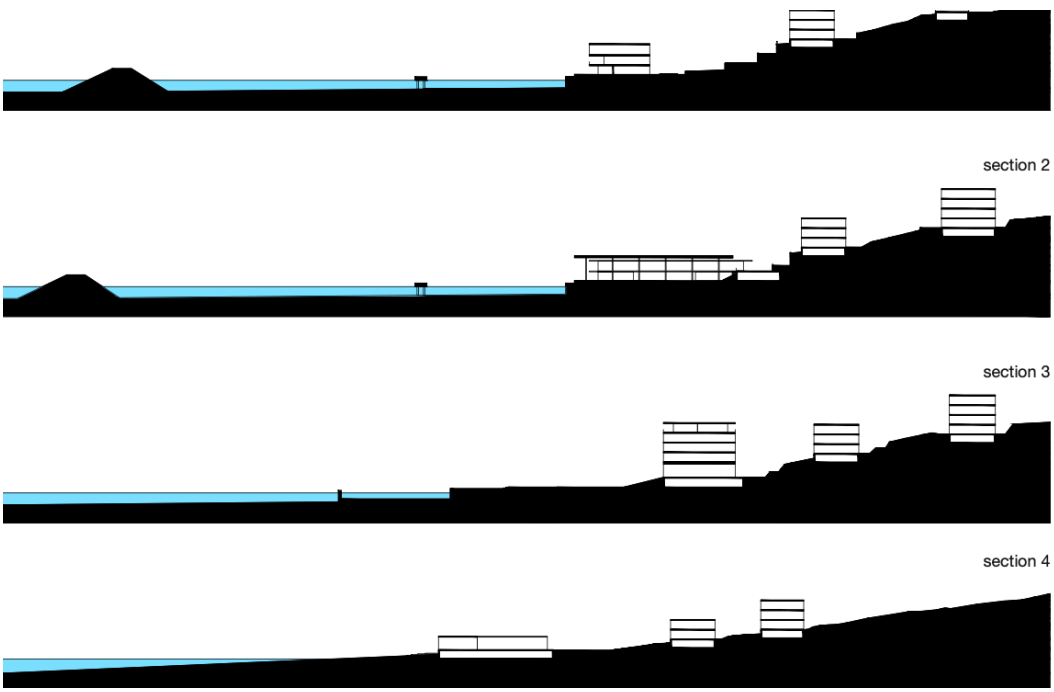


Fig.3/ 3D render of the project. Source/ Author

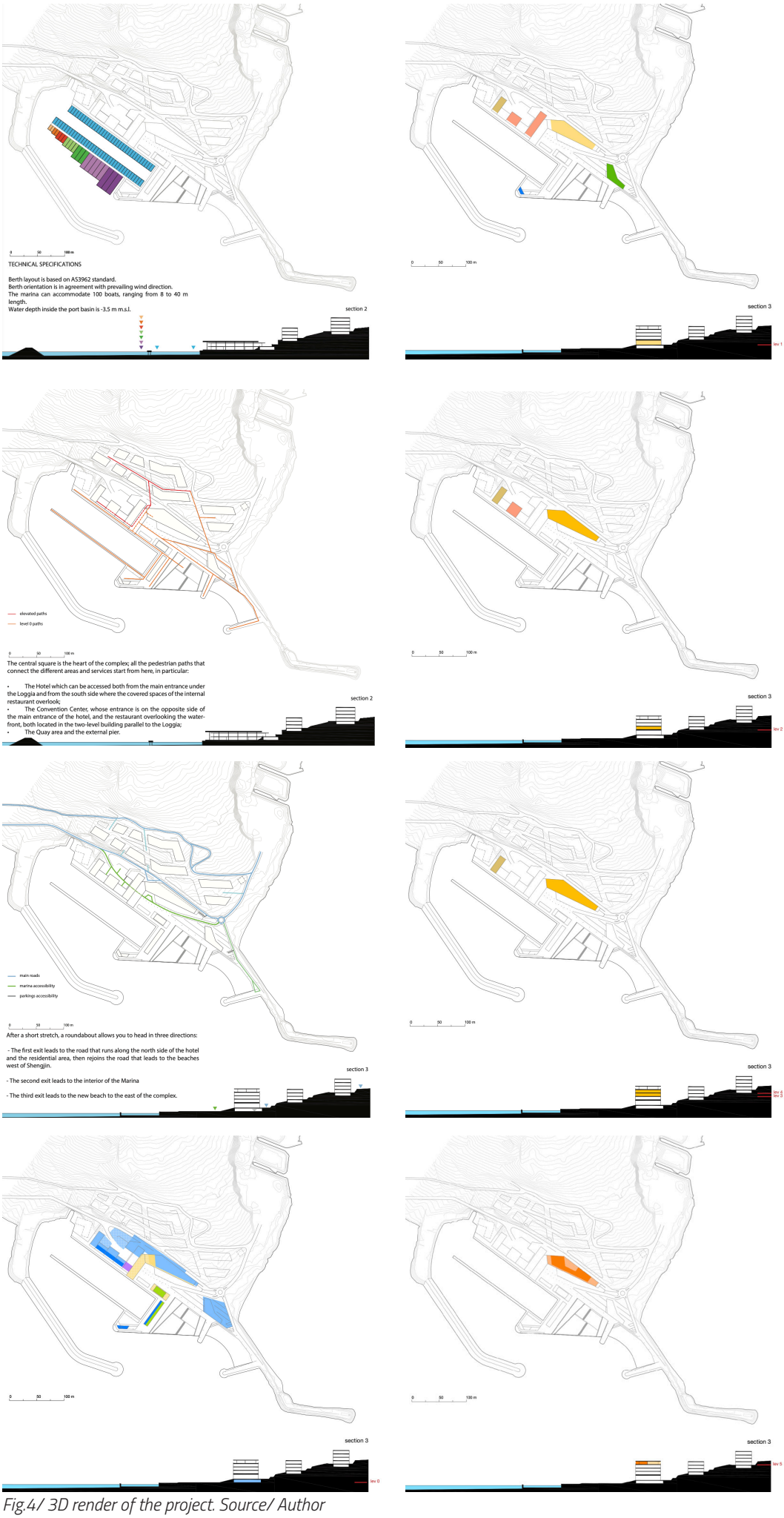


Fig.4/ 3D render of the project. Source/ Author

Fig.5/ 3D render of the project. Source/ Author

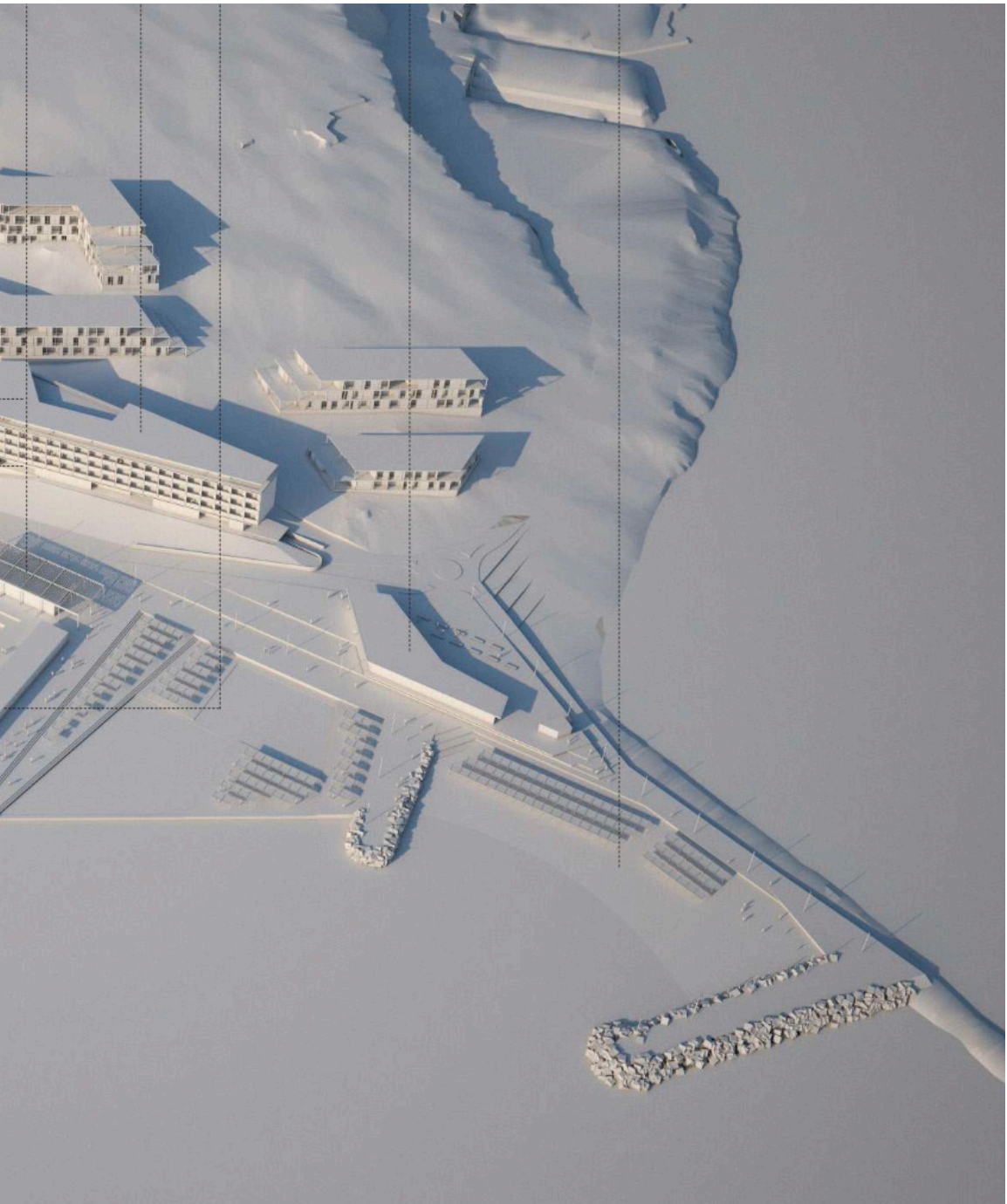
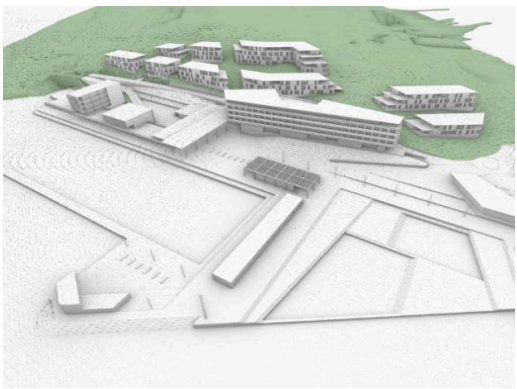


Fig.6/ 3D render of the project. Source/ Author



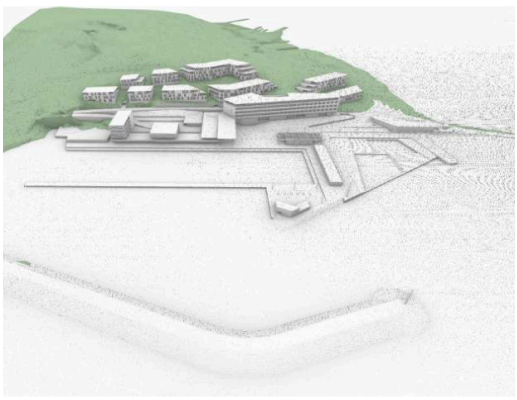


Fig.7/ 3D render of the project. Source/ Author

Fig.8/ 3D render of the project. Source/ Author

Fig.9/ 3D render of the project. Source/ Author

Fig.10/ 3D render of the project. Source/ Author

6.1
Dr. Llazar Kumaraku

6
Conclusions

CONCLUSIONS

Rethinking and inventing Territory, Infrastructure and Housing in the case of Post pandemic Region of Lezha (Albania) - Part II

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DOI: 10.37199/o41008214

Introduction- This issue opens with a foreword by Prof. Besnik Aliaj and Prof. Sotir Dhamo analyzing through a descriptive and analytical-critical reflection a series of proposals made by the participants of the research workshop between Ferrara and Polis.

The innovative character of this issue is immediately distinguished by the analysis of the sustainability of Albanian settlements and of the main administrative actors made by Dr. Rudina Toto. The author analyzes the concept of sustainability and resilience at a theoretical level, focusing continuously on the local context. The interaction between the main actors to have a stable and resilient settlements is synthesized in the second scheme of Toto's essay. There it is clearly described how a resilient system works in relation to its goals.

After the theoretical and practical framework has been laid out in the first two chapters, the same scheme is followed with the previous issue on the Region of Lezhe, where proposals for a sustainable region have been made. These proposals have been synthesized into intervention strategies in similar contexts with similar critical points. The proposals follow the same scheme, starting from those for infrastructure to those for the environment and ending with the proposals for dwelling and housing.

New proposals for planning and settlement models through Infrastructure and service interventions (part II).

As it was emphasized in the first part of these conclusions, the interventions in the infrastructure were seen in the service of the specialization of the region in different topics, setting as the main objective the improvement of the quality of the space with the aim of increasing well-being and tourism.

In this line, there are also the suggestions made by Filippo Petrocchi, who proposes a multimodal transport based on different types of transport, starting from the classic ones to alternative transports that focus on environmental and sustainability issues. In his article Petrocchi states "... it is needed an inclusive and multi-modal mobility, able to connect Lezha region with national and international routes, not only by car but also with public transport such as bus, ships, or trains." This proposal, that overlap all types of routes in a single point, has to be more clarified about his spatial pertinence according to the real needs of the Region of Lezha. The proposed routes, in addition to classical itineraries, can be done by using not conventional types of transport as horses or donkeys. This solution can be applied in aeras with sloppy terrains or different kind of realities.

The proposal made by Irene Ruzzier on the use of art as a catalyst for improving the quality of life in innovative cities places emphasis on art included in public space. Ruzzier considers the infrastructure not only as a "connector" between two settlements but also gives infrastructure interventions a touristic "theme". In fact, her writing holds in the embryo the creation of different "paths" for different touristic purposes. The author considers art and artistic interventions in public space as a kind of "infrastructure" that improves

the quality of life. Here the references to "Nuova Gibellina" are as clear as they are silent. From these proposals, tourist itineraries can emerge that focus on the art and history of Lezha, but without forgetting the proposals for agricultural itineraries, agro-tourism, natural and recreational itineraries.
The article written by Otello Palmini proposes to adopt a context-based and small-scale approach to maximize the positive effects of the digitalization of some spaces related to agritourism, mobility and environmental conservation. The author consider digital spatial integration as "an opportunity for regional development, promotion and conservation for Lezha: tourism, mobility and nature preservation can certainly be the focal points of this intervention." The discussion made in this paper sees digital integration not only as a need of the context to modernize but as a way to increase community and social awareness and the author shows this through references such as Richard Sennett or Shannon Mattern.
These three proposals that consider infrastructure and services from an alternative point of view, together with the proposals given in the first part by other authors, cover a holistic panorama for the treatment of settlements after the pandemic period.

New Proposals for the protection and conservation of biodiversity and the Environment (part II).
Beyond the proposals made in the first part of the conclusions on the protection and conservation of biodiversity in this issue, we have the explanation made by Dr. Endri Duro on the intervention strategy in the context of Lezhe. Duro explains, in his article, in a clear and comprehensive way the strategy of superimposition that translates into an interdisciplinary approach for the control and re-thinking of the territory. In fact, the working group led by Endri Duro envisages three main categories of interventions that are listed below and builds on these the proposals for specific projects. The first category is the one that considers Landscape as an infrastructure, the second is Biodiversity preservation by web of channels and the third is Ecological Connections. These three categories that are considered as three main action to co in the future will be explained after a short general description of Lezha region.
Lezha district – a region of 479 km2 located in the northwest of Albania – has a large diverse ecosystem, its environmental and landscape features are of considerable importance and constitute intrinsic characteristics of the region itself. Therefore, disaster risks constitute an issue of prime importance. Extremely important phenomena impacting territorial safety are environmental process changes and sudden spatial transformations caused by climate change. Specifically, the region faces risks related to hazards like surface water flooding, due to extreme rainfall, sea level rise, rock falls, forest fires and also seismic-triggered events. The above-mentioned hazards combined with high levels of vulnerability are consequently followed by losses in terms of physical, economic, environmental and also impact

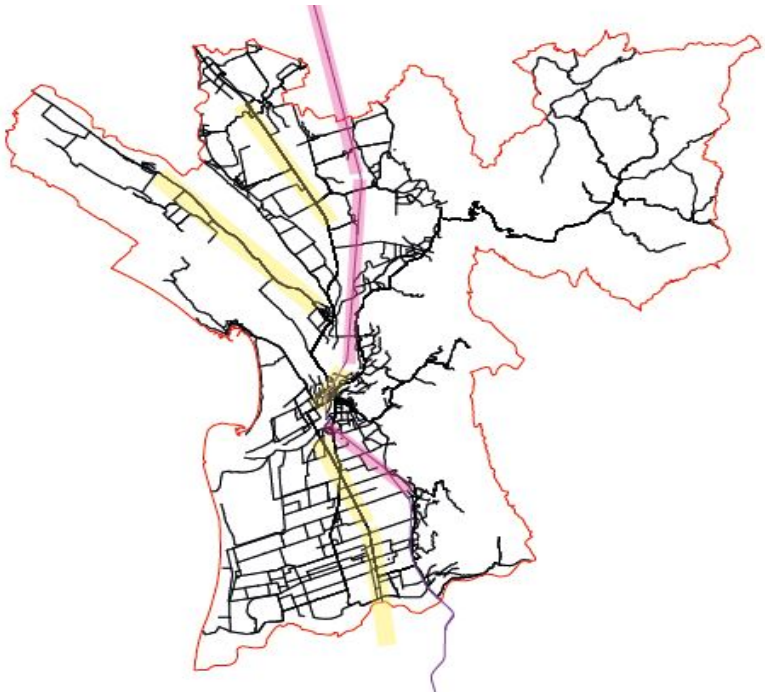


Fig. 1 / Landscape as infrastructures

on biodiversity. The aim is that of proposing several design strategies through a multi-disciplinary approach that tackle such issues in Lezhë region.
Through an extensive work, with a combination of site visits, meetings with local authorities, communities, literature review and mapping processes, the working group proposed a total of five strategic actions (P01 to P03), among these actions the main ones are as follows:
P01- Landscape as Infrastructure - This strategic action required a careful analysis of the water as a modifier of the existing system. Therefore, a risk scenario was developed to project the condition of extreme territorial transformation. The extreme risk scenario was achieved through the analysis of the flooding caused by surface water and extreme rainfall and a sea level rise of 1.5m since they represent the main problems facing the Lezha district. Such representation on a district scale allows us to understand which areas coexist with a high risk that needs to be addressed to mitigate their impacts. A reinterpretation of the landscape, identifying linear infrastructures as elements that can be used to improve territorial resilience performance is the first strategic action. The aim is that of a transition from wetland to agricultural land in a hybrid way rather than rigid measures using for example high embankments.

P02- Biodiversity preservation by web of channels - It is proposed that through improved water resource management it is possible to protect the land from salinization that comes as a result of the advancement of the sea. At the same time a reduction of pollution is reached caused by cultural eutrophication in the lagoon. By digging a web of water channels from the Drin River to the shores near the delta to dilute the pollutants and by bordering them with cane thickets to boost the purification it will be possible to create new environments for wild animals that are lowering in number because of the reduction of their natural habitat for nesting, rubbing and feeding; this solution will also reduce the presence of typical invasive species, like phytoplankton, mesophytes and crustaceans that are profiting of the actual condition of cultural pollution of the Kune-Vain lagoon, due to the human activities.

P03- Ecological Connections - This proposal consists in developing an ecological corridor that connects the wetland and lagoon with high-land, connecting also two natural protected areas of the region: Rana e Hedhun and Kune Vain Lagoon. The need for such eco-corridor is due to fragmented natural landscape and protected areas, biodiversity trapped in case of wildfires, hazardous accidents or floods, the decrease in ecosystem services due to deforestation and finally such corridor would serve as a "fence" to urbanization processes. Biodiversity safe passage, the increase in ecosystem services through forestation and the development of a wind energy park are some of the functions of the ecological corridor in addition to the aforementioned connection functions that it has. The specific proposal for the

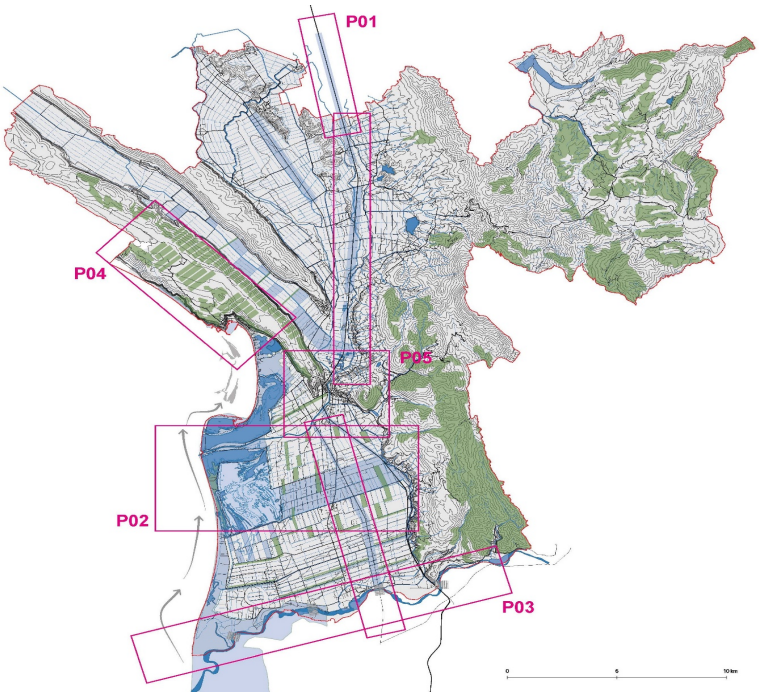
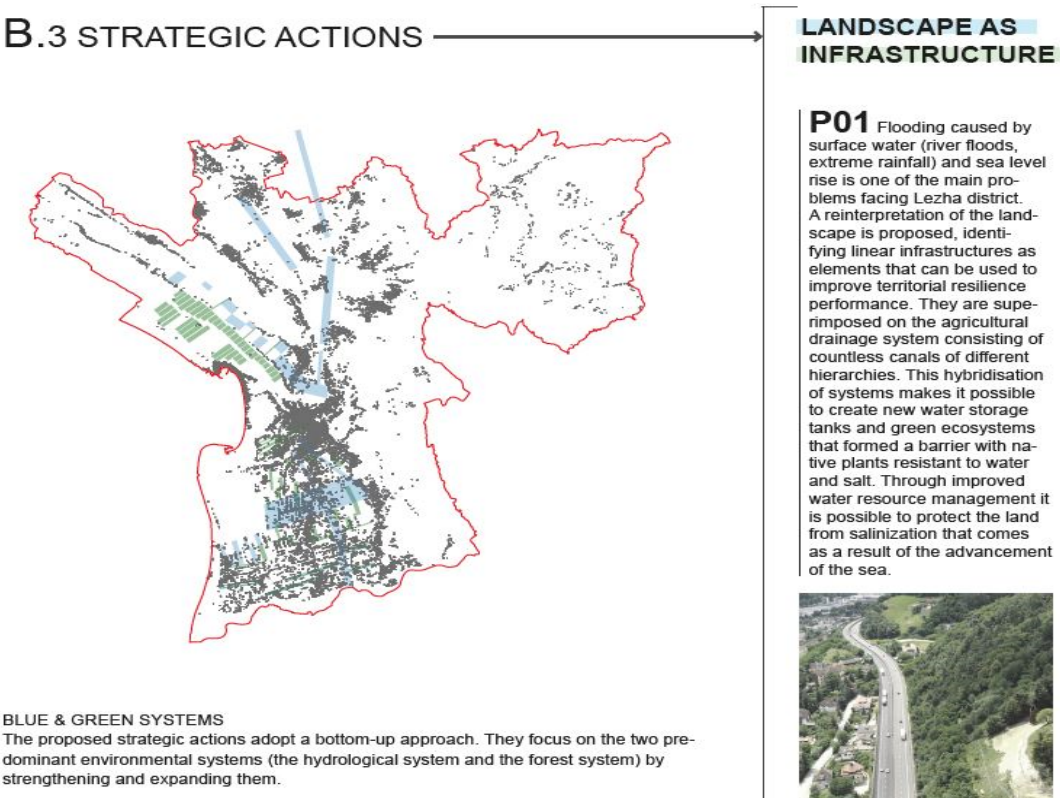


Fig. 2 / Lezhe as a superimposed system

connection of the areas consists in two proposal areas, Marlekaj Hill (proposal one) and a connection NOD (proposal two). The existing situation in the connection NOD is characterized by a combination of wetland areas with some high-risk areas around dangerous infrastructures. These high-risk areas can be encapsulated through the development of buffer areas to avoid any issues related to this kind of dangerous infrastructure. Three eco bridges can be integrated with a natural path to connect with Proposal Area 1.

Lorenzo Tinti's proposal for a "Linear infrastructure assets as a territorial system for flood disturbances control" is added to these three strategic actions to protect and conserve Biodiversity and the environment. In his article, Tinti seeks to establish a relationship between linear infrastructure and flooding. The proposals made are aimed at solving the problem of flooding not only from rivers but also what can happen due to the rise of the sea level caused by global temperature increase.
Anira Gjoni's article also explores the topic of floods. The author analyzes the amount of rainfall in the years 2020 and 2021 by comparing it with the average rainfall from 1962-1990. The information presented in the precipitation table (Table 1) is very interesting to analyze. If we compare the annual total amount of rainfall for the year 2020 (1264 mm) and for the year 2021 (1416 mm) with the annual average total for the period '62-'90 (1362 mm), it is clear that the total amount is close to the total amount of the average for the period 62-90. What is different from the monthly analysis is a shifting of the biggest rainfall amount from the autumn months to the spring months.
If the total annual quantity has remained the same but the period of rainfall and the intensity at a certain moment has changed for the author, it is logical that the problem of flooding is of an urban character. She highlights the problems in the occupation of public space by informal buildings and in the permeability of the city's surface. At this point, the proposal is logical and oriented towards strategies for increasing the ability of the soil to absorb rainfall.
With these proposals, the suggestions to protect diversity and conserve the environment are closed.

New Proposals for innovative housing models that reflect the needs of contemporary society (part II).
This paragraph concludes a series of proposals and suggestions for the city of Lezhe in the framework of the "Spatial solutions for the post pandemic city" project co-financed by POLIS University and AKKSHI.
Proposals for innovative housing models are addressed in the article by Malvina Istrefaj and Llazar Kumaraku that opens chapter five of this issue and is titled "Innovative housing models that reflect the needs of contemporary society (Post-pandemic context)". In this article, the authors, together with a group of PhD candidates, analyze the urban space and typologies of buildings in the city of Lezhe and propose different kind of solution for post pandemic age housing. From the urban analysis and the needs caused by



the pandemic situation, it is passed to a series of typologies of urban forms that meet the new needs of society dictated by the critical moments of recent years.

The authors continue with the analysis of different typologies of housing where they highlight three main typologies of housing present in Lezhe. They underline the "detached type", "linear type" and "Tower type". These three main types have been analyzed on their current state and have been made schematic proposals for possible alternative configurations.

An important paragraph within the article is the proposal of new typologies of apartments that reflect the needs of the society dictated by the actual crisis. These proposals for the transformation of the current structures and for new typologies of apartments and the different ways of their aggregation make the context of Lezha able to withstand not only the current crises but also those that may appear in the future.

Following the above article, we find a literature review by Luca Lanzoni on "Indoor pollutant evaluation and new building solutions to reduce them". In this article, the author makes a critical reading of the literature on this topic and proposes strategies for how pollution can be reduced in the indoor environments of housing. The author emphasizes the fact that in the current period and especially after the pandemic, people spend more time inside the home environment and for this reason must be considerd the quality of the materials used, which are the main pollutants inside the houses and the direct ventilation of houses. Lanzoni also emphasizes the importance of paying attention to the pollutants present in the ventilated air filters, which can be transformed into one of the main pollutants for domestic environments.

The article by Elena Verzella titled "Beyond boundaries. Exploring new post pandemic housing models through the reformulation of collective spaces" takes in consideration two different space typologies: the "in-between" space, resulting from the aggregation logics driven by the different historical settlements models; and the "residential/ outdoor space interface" between private buildings and the adjoining common areas (streets, squares, parks, etc.). For each of these two categories, the article tries to establish potential design principles, strategies and tools which can embrace the twofold necessity of creating spaces where to integrate the new recreational, social or working activities which have been making their way into the post-pandemic idea of living, but also to give possible answers to the forementioned impending climate issues.

At the level of typology of new constructions researches the article by Bianka Madhi, which proposes three new modalities of housing construction. The new modalities are presented through the "Linear Typology, Box Massing Typology and Unit House Typology. These three typologies are presented as design strategies for new urban morphologies built on innovative typological configurations. These typologies appear flexible to the existing urban contexts and to the terrain.

CHANNEL IMPLEMENTATIONS

P02 At the same time we reach a reduction of pollution caused by cultural eutrophication in the lagoon. By digging a web of water channels from the Drin River to the shores near the delta to dilute the pollutants and by bordering them with cane thickets to boost the purification we will create new environments for wild animals that are actually lowering in number because of the reduction of their natural habitat for nesting, hubbing and feeding; this solution will also reduce the presence of typical invasive species, like phytoplankton, mesophytes and crustaceans that are profiting of the actual condition of cultural pollution of the Kune-Vain lagoon, due to the human activities.

RIVER MANAGEMENT

P03 In addition to these proposals, a reorganisation of Mat River dynamics is being implemented through the removal of quarries, this action allows fluvial aggregates to reach the coast and compensate for the erosive action of the sea, thus mitigating sea level rise.

ECOLOGICAL CONNECTIONS

P04 Forests have a fundamentally protective role against the effects of climate change, such as foods and water scarcity, while also contributing to CO2 reduction in the atmosphere through their sink function. Yet, forests remain largely unprotected or poorly managed in Albania, still prone to illegal logging and trade, regardless of the respective moratorium approved by the Parliament in 2016. The other face of the proposal consists of connecting two natural areas by creating a green ecological corridor on the hill. In addition a pillar system for the use of wind energy capable of serving the entire district and triggering energy independence is suggested.

URBAN GERNEERY

P05 Furthermore, beside the interventions on non-urban sites, a reinterpretation of the existing city fabric is proposed. The increase of green spaces in the city of Lezha as there is a pronounced lack of them. Adding them, besides reducing pollution of the air and creating spaces that citizens can use, would help in the levels of permeability of the rainwater into the ground thus contributing to the reduction of floods. This can be done by intervening in the city neigh\borhoods by planting vegetation that adapts to the northern plain mediterranean climate zone.

These are, not only alternative proposals, but by placing in the center the real problems of the space and giving them solutions that take into account the environment issues and sustainability, build the image of a resilient region that is able to face the challenges of a new millennium that has as keyword the crisis.

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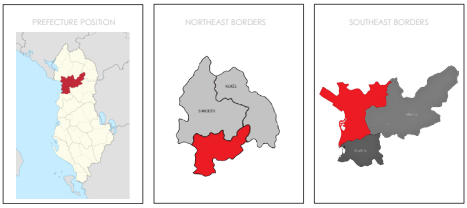
Planning Cities for the (Post-)Pandemic/Crisis Era

Aspects of territorial sustainability and resilience @ Lezha Region, Albania.

Kristiana Meço, Filippo Petrocchi, Albina Toçilla, Irene Ruzzler, Otello Palmini, Andrea Gjoka, Flogerta Krosi



Lezha Connections

Shëngjin - Bari
Water distance - 150 miles

Lezha - Tirana
Earth distance 64 km

Lezha - Pristina
Earth distance 225 km
Air distance 158 km

Lezha - Podgorica
Earth distance 97 km
Air distance – 87 km

Lezha - Skopje
Earth distance 300 km
Air distance 131 km

Objectives

Development of a more sustainable tourism during summer;
Foster alternative tourism during the rest of the year.

The key for the achievement of this goals is infrastructure development.

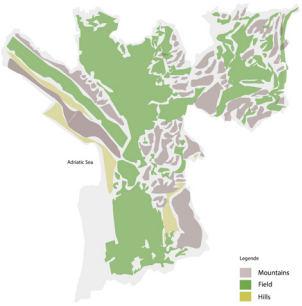
Methodology

Two main phases:

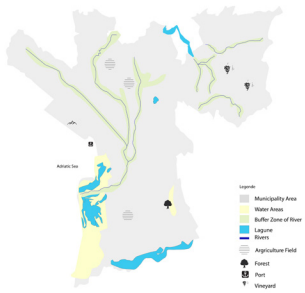
1. Field research, observations, interviews with the local actors;

2. Infrastructural, settlement, morphological, hydrographic and cross-cutting analysis.

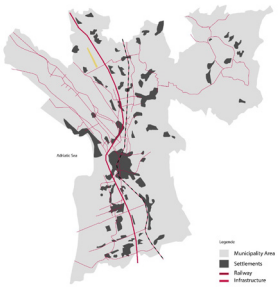
Morphology Analysis



Hydrography Analysis



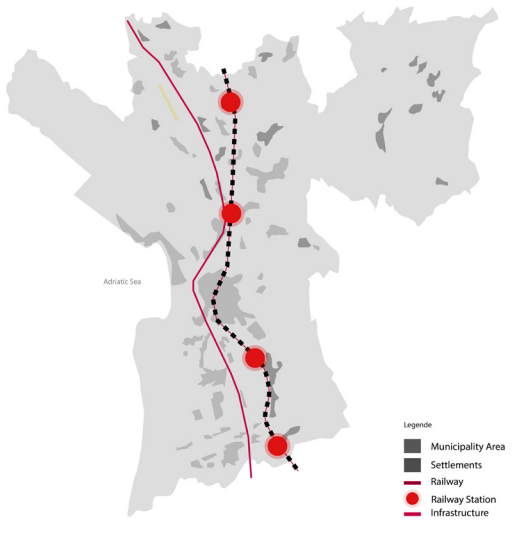
Infrastructure-Settlement Analysis

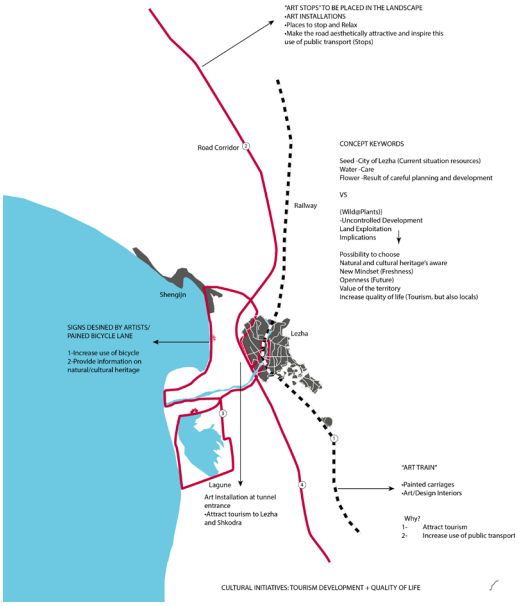


AGRITOURISTICAL

CULTURAL

Train Stations



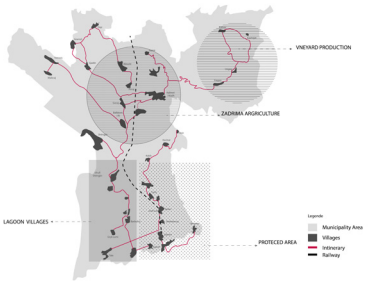


Spatial Conclusions

Main areas of interventions

INFRASTRUCTURE
Seaside

Villages Potentials Clusters



1. Vineyard production
Ungrej
Fregen
Kalivaç
Kashnjet

2. Zadrima Agriculture
Fishtë
Kallmet I madh
Blinisht
Dajç
Balldren
Gocaj
Gjader
Pirraj
Gramsh

3. Lagoon Villages
Ishull shengjin
Barbulloj
Gryk lumi
Tale
Gajush

4. Protected area
Velë
Kaçinar
Kolç
Tresh
Spiten
Markatomaj
Zajmen
berzanë

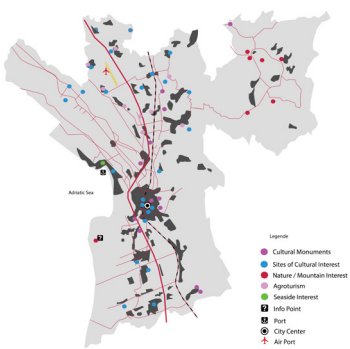
Issues:
- Traffic reduction in the intersection in the entrance of the city Roundabout
- Enhancement of Shëngjin accessibility

Solutions:
- Restoration of the railway for commercial and civil purposes
- Reactivate the railway to increase the communication between Tirana and Lezha and between Lezha and the piedmont areas.
- Development of a cycle path to improve and promote sustainable mobility in the section between Lezha and all the areas nearby.
- Improvement of the road signal and tunnel construction
- Blue corridor

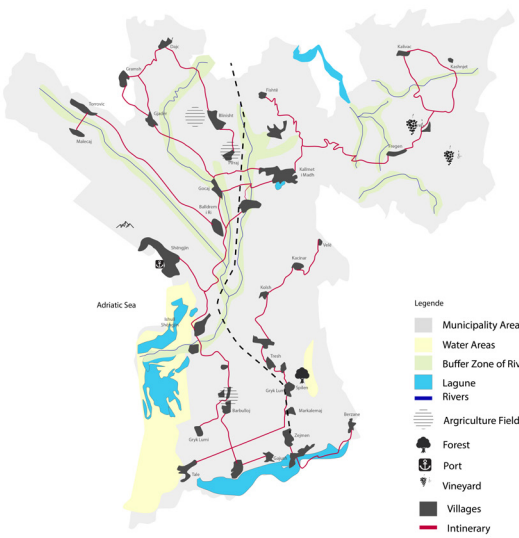
Territory Cross-Cutting

Railway agriculture land cutting
Road corridor agriculture land cutting

Tourism & Services Analysis



Overlapping Proposal



Issues:
- Lack of connections to access and promote local cultural sites

Solutions:
- Connect Shëngjin with Lezha through a cycle path
- Artistic interventions to enhance attractiveness and to promote cultural tourism during the whole year.

Issues:
- Lack of connections between mountain, small villages and the Zadrima site.

Solutions:
- Introduce train stops in the Zadrima plain to make those areas more accessible;
- Creation of a widespread road network to improve goods trade between local farmers and agritourism and to make this area enjoyable for tourists.

Issues:
- Preservation of protected areas
- Integration of naturalistic tourism with the rest of the region's activity

Solutions:
- Creation of a cycle path from Lezha to the Lagoon to reduce the use of cars in the protected areas
- Panoramic cycle path from the lagoon to Shengjin
- Improve the railway line in the piedmont area and develop a series of trails for trekking and tracks for bike tourism

Planning Cities for the (Post-)Pandemic/Crisis Era

Aspects of territorial sustainability and resilience @ Lezha Region, Albania.

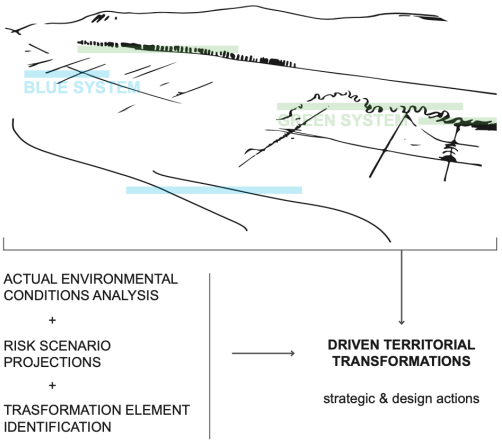
Rodion Gjoka, Lorenzo Tinti, Antonella Volta, Matteo Bisi, Anira Gjoni, Remijon Pronja | tutor: Endri Duro

UNIVERSITETI POLIS · UMD · DA Dipartimento Architettura Ferrara

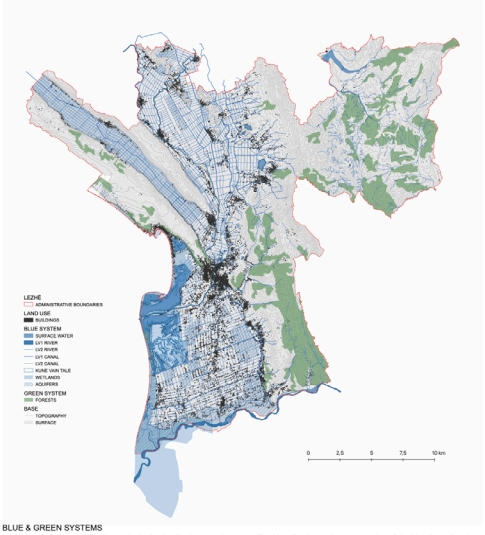
SUPERIMPOSITIONS.

Proposals for environmental systems implementation and biodiversity development in the Lezhë region through a multi-disciplinary approach.

Multiple hazards are present over the territory and their impact extends beyond the administrative boundaries, revealing the need for an integrated local - to national – to regional approach with the aim of building resilience, as a response to uncertainties. Lezhë district – a region of 479 km2 located in the north of Albania – has a large diversity ecosystem (Gencer, 2014), its environmental and landscape features are of considerable importance and constitute intrinsic characters of the region itself. Therefore, disaster risks constitute an issue of prime importance. Extremely important phenomena impacting on territorial safety are environmental processes changes and sudden spatial transformations caused by climate change. Specifically, the region faces risks related to hazards like: surface water flooding, flooding due to extreme rainfall, sea level rise, rock falls, forest fires and also seismic-triggered events. The above-mentioned hazards combined with high levels of vulnerability are consequently followed by losses in terms of physical, economic, environmental and also impact on the biodiversity. Facing such challenges, it is necessary to build a large-scale strategy with the aim of building territorial resilience through strengthening environmental systems. When dealing with complex issues where biotic and abiotic components are involved in order to propose a design strategy, a multi-disciplinary approach is a prerogative. This contribution proposes a macro-strategy that faces environmental and territorial issues, followed by specific project actions related to the implementation of blue (1.) and green (2.) asset with the objective of reducing disaster risk. In conclusion, starting from a broad and integrated vision of issues related to territorial and environmental systems, this proposal is identified as a pragmatic analysis that seeks to decline concrete actions that will transform the territory with the aim of improving its performance and implementing its resilience to disaster risks.

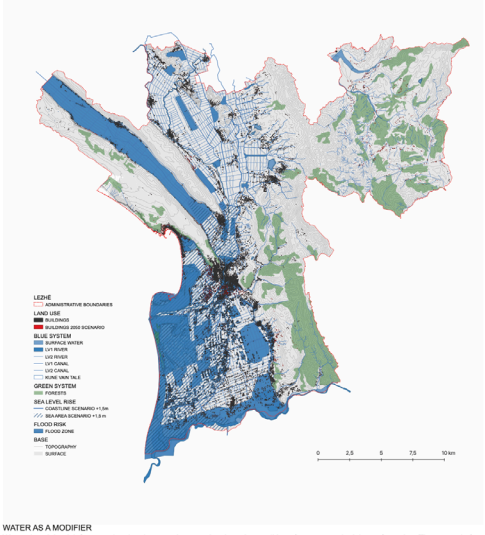


A.1 ENVIRONMENTAL ACTUAL CONDITIONS



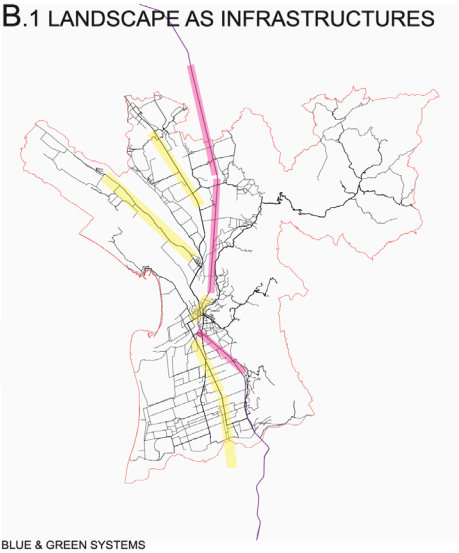
BLUE & GREEN SYSTEMS
Awareness of the prevailing issues in the Lezhe district was a key step. The identification and representation of the blue (water) and green (forest) systems, as well as the anthropogenic footprint, allowed the construction of a territorial mosaic layer on which the project was then grafted.

A.2 RISK SCENARIO PROJECTIONS



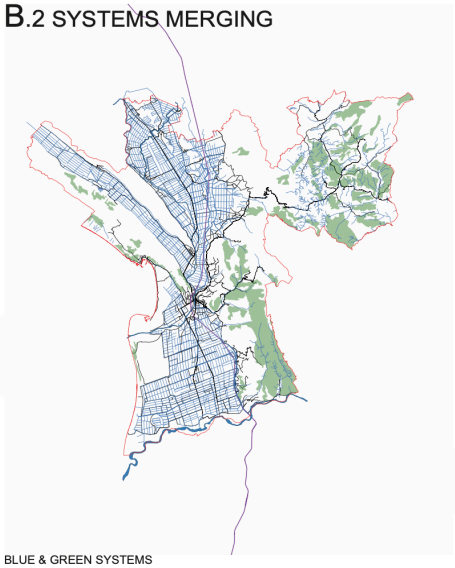
WATER AS A MODIFIER
We analysed the risk factors related to the water issue and projected a condition of extreme territorial transformation. The two main factors analysed were flooding caused by surface water and extreme rainfall and the sea level rise with a +1.5m scenario. This representation on a district scale allows us to understand which areas coexist with a high risk that need to be addressed in order to mitigate their impacts.

B.1 LANDSCAPE AS INFRASTRUCTURES



BLUE & GREEN SYSTEMS
Recognition of infrastructures as preponderant mutant actions on a territorial scale makes it possible to trigger design actions with direct consequences on landscape.

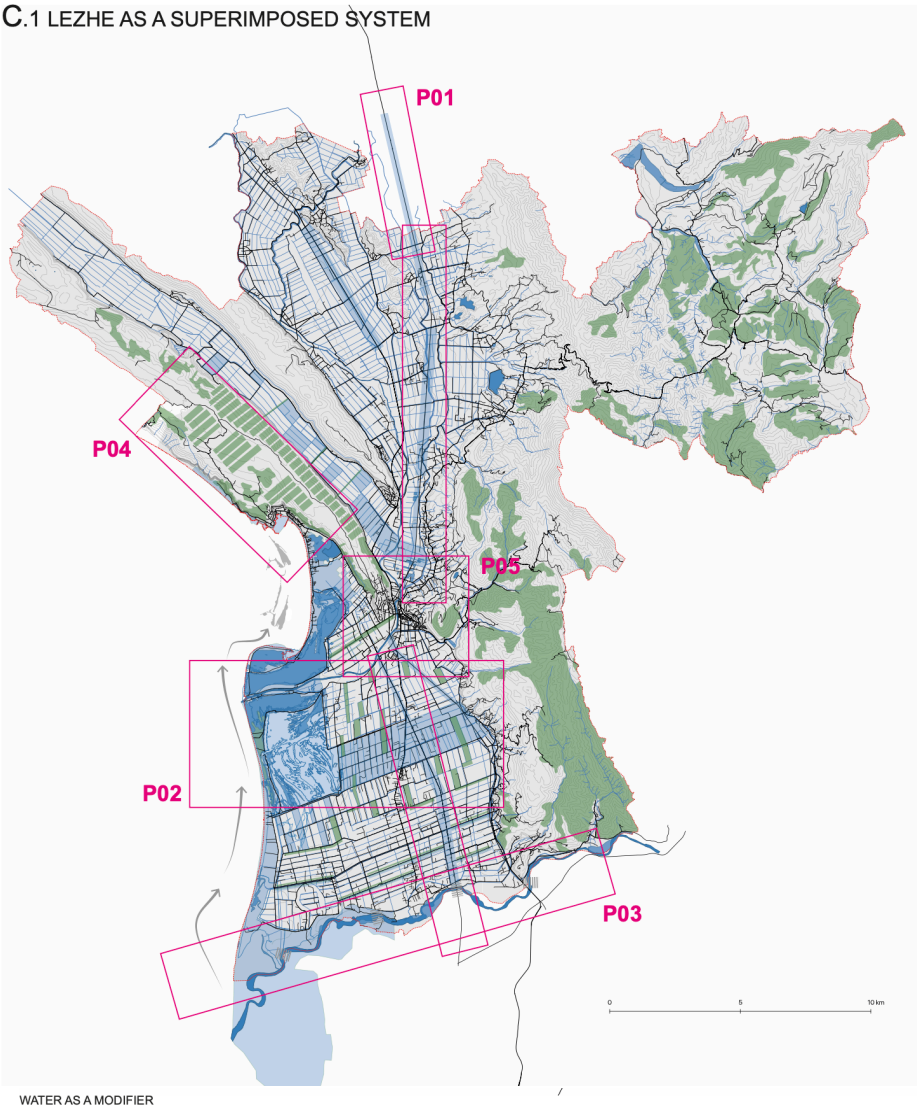
B.2 SYSTEMS MERGING



BLUE & GREEN SYSTEMS
The overlapping of the networks (natural and anthropic) present within an area allows the project to trigger conscious logics and strategies in its transformation.

Spatial Conclusions

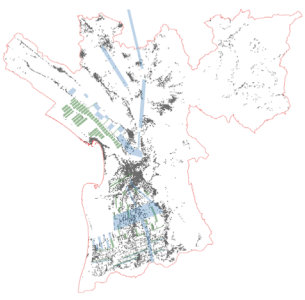
C.1 LEZHE AS A SUPERIMPOSED SYSTEM



WATER AS A MODIFIER

The strategic directions taken then have concrete repercussions on the territory. The new landscape is a hybrid, highly dynamic and expressly resilient landscape. Its adaptive capacity is implemented through the inclusion of new devices that perform well in the face of sudden changes, such as floods and fires. Thanks to the development of specific project themes, smaller-scale points were also touched upon with pilot projects of high environmental value. The result is a new territory that accommodates different ecosystems with a high adaptive value.

B.3 STRATEGIC ACTIONS



BLUE & GREEN SYSTEMS

The proposed strategic actions adopt a bottom-up approach. They focus on the two predominant environmental systems (the hydrological system and the forest system) by strengthening and expanding them.

LANDSCAPE AS INFRASTRUCTURE

P01 Flooding caused by surface water (river floods, extreme rainfall) and sea level rise is one of the main problems facing Lezha district. A reinterpretation of the landscape is proposed, identifying linear infrastructures as elements that can be used to improve territorial resilience performance. They are superimposed on the agricultural drainage system consisting of countless canals of different hierarchies. This hybridisation of systems makes it possible to create new water storage tanks and green ecosystems that formed a barrier with native plants resistant to water and salt. Through improved water resource management it is possible to protect the land from salinization that comes as a result of the advancement of the sea.

CHANNEL IMPLEMENTATIONS

P02 At the same time we reach a reduction of pollution caused by cultural eutrophication in the lagoon. By digging a web of water channels from the Drin River to the shores near the delta to dilute the pollutants and by bordering them with cane thickets to boost the purification we will create new environments for wild animals that are actually lowering in number because of the reduction of their natural habitat for nesting, hubbing and feeding; this solution will also reduce the presence of typical invasive species, like phytoplankton, mesophytes and crustaceans that are profiting of the actual condition of cultural pollution of the Kune-Vain lagoon, due to the human activities.

RIVER MANAGEMENT

P03 In addition to these proposals, a reorganisation of Mat River dynamics is being implemented through the removal of quarries, this action allows fluvial aggregates to reach the coast and compensate for the erosive action of the sea, thus mitigating sea level rise.

ECOLOGICAL CONNECTIONS

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URBAN GERNEERY

P05 Furthermore, beside the interventions on non-urban sites, a reinterpretation of the existing city fabric is proposed. The increase of green spaces in the city of Lezha as there is a pronounced lack of them. Adding them, besides reducing pollution of the air and creating spaces that citizens can use, would help in the levels of permeability of the rainwater into the ground thus contributing to the reduction of floods. This can be done by intervening in the city neighborhoods by planting vegetation that adapts to the northern plain mediterranean climate zone.

Planning Cities for the (Post-)Pandemic/Crisis Era

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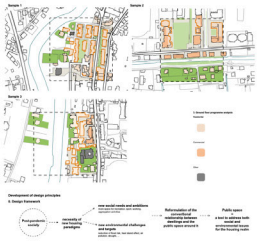
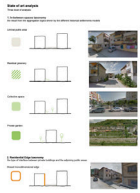
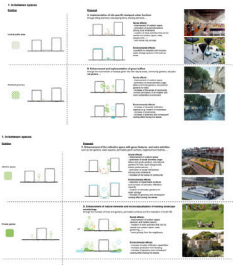
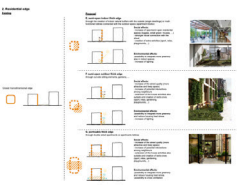
UNIVERSITETI POLIS · UMD · DA Dipartimento Architettura Ferrara

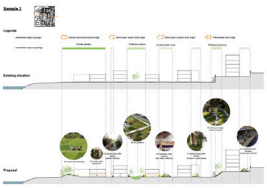
MAP OF LEZHË

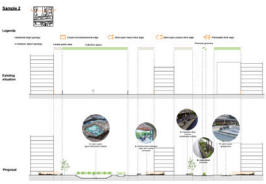


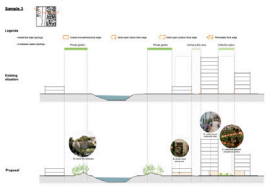








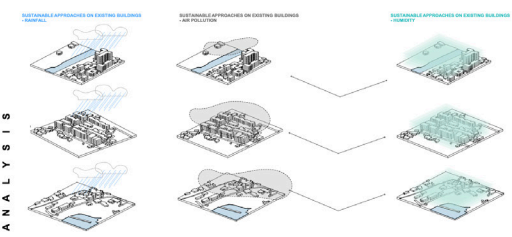




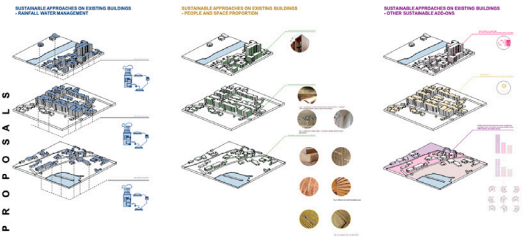
EXISTING SITUATION/ CONDITION AND ISSUES

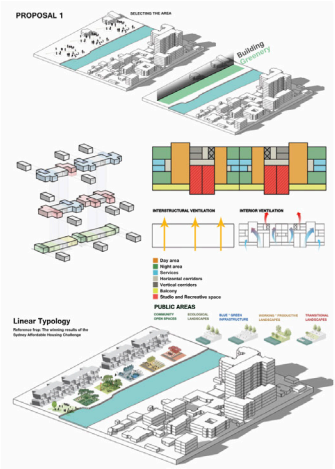
POSSIBLE ELEMENTS TO IMPROVE SUSTAINABILITY/ PREVENT RISKS

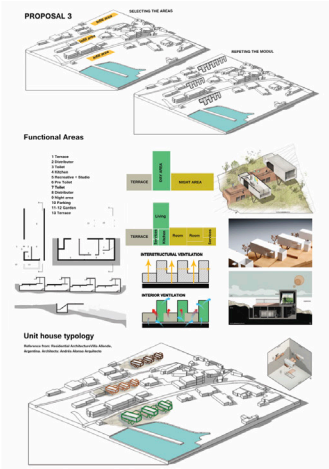
ANALYSIS



PROPOSALS

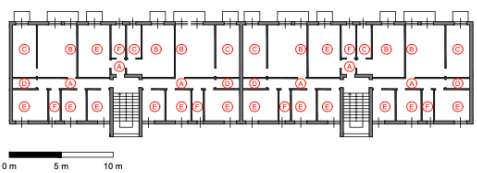


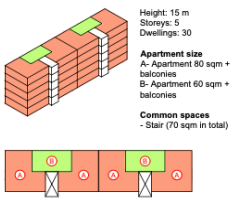




TYPOLOGY: Linear house - current state

Type floor plan (1:200)

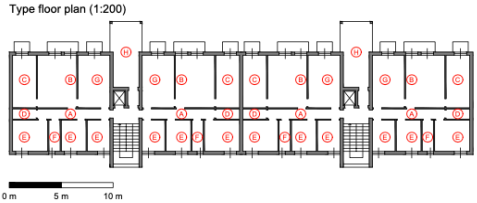


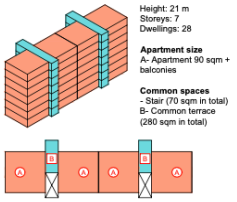


TYPOLOGY: Linear house - proposals of intervention

TYPOLOGY: Linear house - proposal

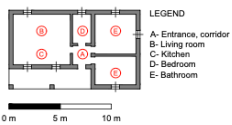
Type floor plan (1:200)



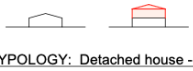


TYPOLOGY: Detached house - curr

Type floor plan (1:200)

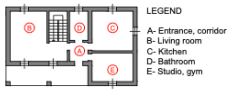


TYPOLOGY: Detached house - prop

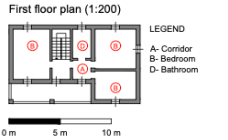


TYPOLOGY: Detached house - pro

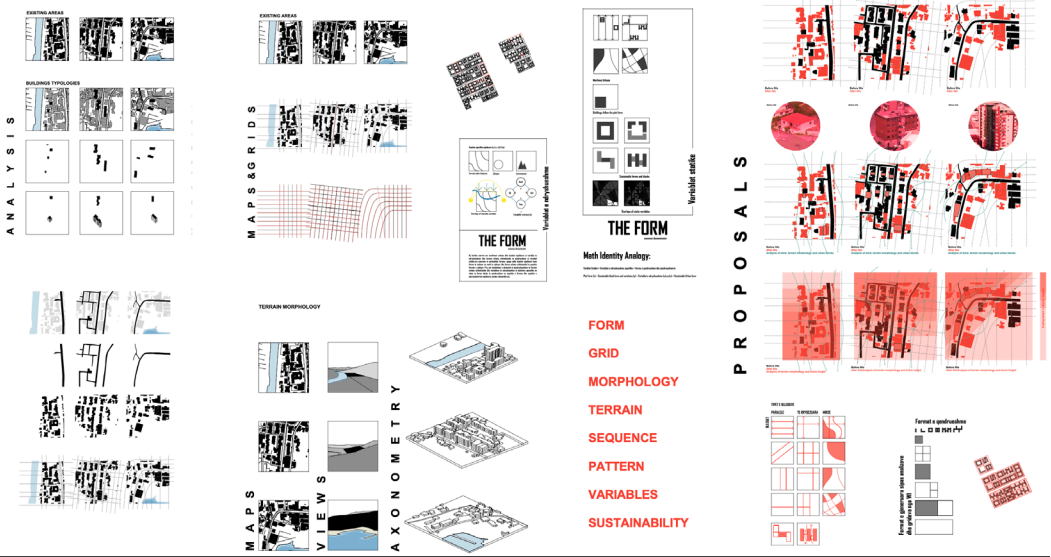
Ground floor plan (1:200)

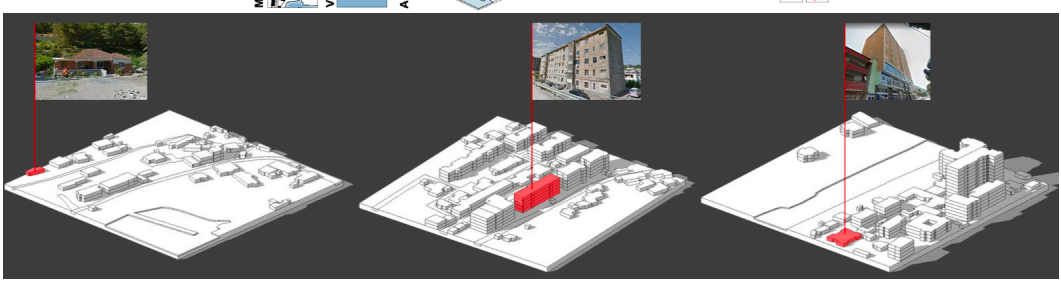


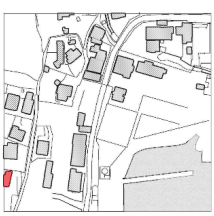
First floor plan (1:200)



TAXONOMY | in between spaces | residential edges







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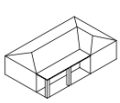


Height: 3 m
Storeys:1

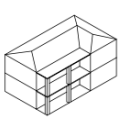
Apartment size
60 sqm

posal of intervention

ENSIFICATION

rder to maintain to expand the interior spaces (studio, ious living room) without permitting land consumption, one rey is added.

posal

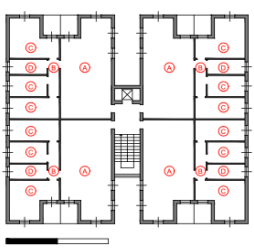


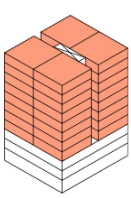
Height: 6 m
Storeys:2

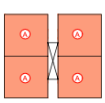
Apartment size
60 + 60 sqm

TYPOLOGY: Tower house - current state

Type floor plan (1:200)



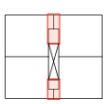




Height: 21 m
Storeys: 7
Dwellings: 28

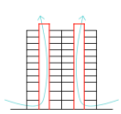
Apartment size
A- Apartment 90 sqm + balconies

Common spaces
- Stair (70 sqm in total)



EXPANSION

Expansion of the size of each apartment by filling the void between the two blocks of the building. In this way more each apartment has been given a space for an extra room (studio, gym, living room).



VENTILATION

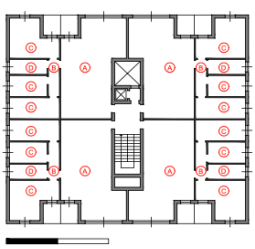
In order to increase the ventilation of the apartments, two chimneys have been created and located into the spaces between the two blocks of the building.

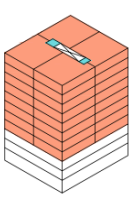
GREEN ROOF

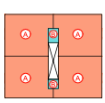
A common and green external space has been created by reusing the flat roof of the building

TYPOLOGY: Tower house - proposal

Type floor plan (1:200)







Height: 21 m
Storeys: 7
Dwellings: 28

Apartment size
A- Apartment 100 sqm + balconies

Common spaces
- Stair (70 sqm in total)

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1.Planifikimi 2.Ndëtime 3.Fshatrat
4.Tregtia turistike 5.Lezha 6.Shqipëri

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