

Reimagining the future of peri-urban spaces: planning narratives for the sustainability of these areas. The case study of “Stena tou Nestou” in Xanthi, Greece

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Abstract

Despite the appearance at international level of planning narratives regarding the equal growth of urban areas, whether they are economically strong or not, we note significant differences in the development of small and big urban areas. Considering the need for inclusive and resilient communities, the paper tries to envisage the future of peri-urban spaces, particularly the visions and models that lead to the economic, social and environmental sustainability of these areas. The choice of the case study the Thrace region in Northern Greece and the ‘Stena tou Nestou’ area was based on the necessity to reflect and change old narratives in the planning processes for poor urban and peri-urban areas and to propose a safe and equitable living environment for the inhabitants of these areas.

Key words: planning narratives, sustainability, peri-urban areas, social and economic injustice, Xanthi (Greece)

Introduction

In the last four decades and especially during the 21st century we observe a strong interest in discourses, strategies and norms regarding the form and functions of urban areas in a sustainable way (Michalina and al, 2021). Concepts like the compact city, the 15 minutes city or the smart city try to give responds to issues such as population increase, demanding human needs as well as environmental degradation related to human activities (Allam and al, 2022, Bibri and al, 2020, Shafiri and al, 2024). Sustainability is not only a solution to increasing environmental pollution and cities’ environmental footprint, but also to questions related to the social and economic structure of cities like high unemployment rate, discriminations and closure of local enterprises and shops (Eizenberg and Jabareen, 2017). It is important to mention the role of sustainability in big agglomerations where there are issues related to the relationship between the city and its suburbs (connection, dependency of suburbs from the activities inside the city) (Riffat and al, 2016) as well as with its surrounding peri-urban area which is usually not built and there is always the risk for urban sprawl towards this area (Geneletti and al, 2017). Urban sustainability as a concept has two distinctive dimensions; internal and external sustainability (Wamsler and al, 2021). While the first one refers to an equitable and inclusive development of all cities’ districts and activities (Bhatia and al, 2024), the second one refers to the relationship between the city and its surrounding environment particularly natural environment (Zucaro and Agostinho, 2025). The external sustainability is a critical issue in contemporary urban and strategic planning. The protection and equitable and inclusive development of peri-urban areas have positive effects on cities’ internal organisation and functions as the two units (city and its peri-urban areas) do not depend on each other but rather collaborate on issues they cannot work alone such as environmental protection and economic development (Marmo and al, 2025).

Even though in documents of international organisations, such as the Agenda 2030, the notion of sustainability is linked to a strong commitment for the equal growth of urban areas despite their economic growth and their geographical position (UN, 2015), we note significant differences in the development of small and big urban areas, urban and rural areas as well as areas of the Global North and Global South (Nagendra and al, 2018). Cities of the Global South and their surrounding peri-urban areas are affected by population increase inside cities’ limits and the consequent exploitation of natural resources that are found in peri-urban areas (Follmann, 2022). The main problem is the absence of urban planning regulations that allow cities to expand towards their periphery without taking into consideration issues such as the protection of the natural environment (Venter and al, 2021). Population increase in cities and urban sprawl are also observed in cities of the Global North as cities’ functions

and organisation seem to attract people from small cities and rural areas. Despite this point in common, we should underline that in cities of the Global North we observe policies and tools for the protection of peri-urban areas such as land uses (for example agricultural activities) and green belts that fit to the more natural character of these areas (Klimczuk-Kochańska and Klimczuk, 2023). Small urban areas as well as rural areas suffer in many cases by economic difficulties and the loss of local population due to changes in production systems that shift industrial and agricultural activities outside big agglomerations or to other countries (Castellano-Álvarez and al, 2024). The result is that these areas progressively lose their urban identity and role at regional and national level (from active economic zones they are transformed to inactive spaces) and in cases of urban sprawl they become part of nearby big urban areas.

Considering the framework of the Sustainable Development Agenda and the need for equitable, inclusive and resilient communities, the main question of the paper is which narratives that is to say which tactics and models lead to the economic, social and environmental sustainability of peri-urban areas? Peri-urban areas are spaces outside the cities' limits which are not fully urbanised, there are houses and small-scale economic activities, but the most part of these areas are either agricultural lands or natural spaces (Sahana and al, 2023). These areas are considered as a supplement to the cities' activities and functions, and their relationship is based on dependency; cities' inhabitants need the products and the resources of peri-urban areas while the economic activity and prosperity of peri-urban areas depends on the exchange links between themselves and the cities (Ravetz and Sahana, 2024). This close relationship between cities and their surrounding areas has an impact on the development model of peri-urban areas as in many cases they lack the necessary infrastructure, equipment, facilities and services (schools, small health care centres, post offices) and they cannot function independently from the cities (Ravetz and al, 2012). In other cases, the geographical proximity of cities and their surrounding peri-urban areas lead to the progressive urbanisation of the latter as the cost of buying land is lower compared to the cities' urbanised districts and there are many vacant lands (Tione and Holden, 2020). It is clear that existing planning strategies for the development of these areas like urbanisation policies and economic dependency between the cities and their surrounding areas do not lead to the creation of sustainability conditions as peri-urban areas cannot be considered as equitable, inclusive and resilient communities. Furthermore, car dependency in peri-urban areas in order to have access to necessary facilities and services on a daily basis deteriorates the air quality and leads to environmental degradation and not to sustainability.

In this context, it is important to question the appearance of new planning policies for areas outside the cities' limits, which are not fully urbanised and maintain the traces of their past (physical and social). These new narratives seem to be closer to the main axes of sustainability (environmental protection, economic development, social cohesion) and to be different from the existing development strategies resulting from the capitalist economic development model. The basic idea is to take into consideration and to put forward the particular local characteristics and existing power dynamics in order to propose a development scenario for peri-urban areas that responds to inhabitants needs, reduces the dependence between peri-urban areas and cities while at the same time agricultural land and natural resources outside cities' limits are protected from exploitation (Fanfani and al, 2024). Even though the economic development of these areas is a critical point to be considered due to existing conditions of population decrease and economic recession, two equally important parameters for their development are the creation of social cohesion conditions and environmental sustainability. Social cohesion refers to the ties developed between the inhabitants of a certain area due to common goals and beliefs that progressively transform them into communities (Moustakas, 2023). This dimension of sustainability is particularly important to peri-urban areas facing socio-economic difficulties and have a population with different ethnic origins due to the need to create community ties in order to respond to the challenges posed by cities' functions and activities. Environmental sustainability refers to the capacity of existing natural resources to be able to exist in the future (Powe, 2020) in order to create an equitable and inclusive environment for all, for both cities and peri-urban areas population. Development models and strategies that equally manage these three main questions seem to create sustainability conditions in peri-urban areas that were considered for many years as cities satellites.

By taking into consideration the previous narratives regarding the sustainability of peri-urban areas, our research tries to investigate and critically think of the ways which potentially could lead to the economic, social, and environmental sustainability of peri-urban areas. A critical point is to recommend through our research planning methods and tools which could be used as narratives for the development of a specific category of peri-urban areas, the ones that face either economic or social difficulties as economic growth and social equity are, together with environmental protection, the three pillars of sustainable development. Under these unfavourable conditions, where the lack of financial means seems to deteriorate the future development of peri-urban areas, it is important to base the development of these areas according to their internal strengths and power dynamics as well as to search for external opportunities at regional and national level. Which are the strategies, policies and tools to develop these areas and which people should be involved in the procedures of their development? The development of peri-urban areas concerns not only the inhabitants of these areas but also the inhabitants and local authorities of neighbouring cities as their functions and activities in certain cases (for example a peri-urban area could be a Natura Zone and a National Park) affect the development of bigger administrative areas such as regions. In our methodology we identified planning policies for peri-urban areas based on the toolkits of international organisations such as the United Nations (UN, 2015), regional scientists (Spyra and al, 2021) and groups of academics working on the internal strengths and characteristics of urban areas (Kamalipour and al, 2023) in order to analyse the processes that lead to the sustainability of peri-urban areas facing economic and social difficulties.

Methodology

The research method used was the descriptive-analytic. The descriptive method was used in order to define planning narratives for the development of peri-urban areas. Our main hypothesis is that the development of peri-urban areas in a sustainable way, based on their particular characteristics should be the basis for the development of such areas and particularly of those facing socio-economic and environmental difficulties, as in several cases these areas have an ecological interest (national and regional parks, Natura zones) and gather activities of regional and national interest (for example tourism). At the same time, in contemporary city and regional planning policies (urban and peri-urban ecology, environmental urban and regional planning) peri-urban areas are designed as zones that protect natural resources due to the fact that they are protected by national and international legislation. This means that in these areas we can find a significant number of indigenous trees and plants, which in certain cases act as filters to the cities' high pollution levels (air and water pollution). The same areas try to reconcile cities with nature as many indigenous animals (birds and mammals) find shelter in these areas. Peri-urban areas, especially the ones that are part of big environmental zones that are divided between different countries (such is the case of several Natura zones), seem to solve environmental problems which cannot be handled by one country such as rivers and seas water pollution and forests protection as they foster international co-operation in the field of environmental sustainability. This means that these areas can act as places of experimentation of environmental policies and tools with the participation of researchers, practitioners and politicians from different countries.

Peri-urban areas near cities that face significant economic and social difficulties due to deindustrialisation, or the closure of local enterprises seem to bear the effects of this negative context as there are not sufficient funds for their environmental protection and economic development. Areas resulting from deindustrialisation such as former industrial lands, they are heavily polluted and struggle with economic recession. In certain cases, we observe informal settlements in these areas (small houses and warehouses) whose presence in these areas deteriorates the environmental degradation, while contractors, investors and local authorities show a particular interest to build them in order to boost the local economy of neighbouring cities facing social and economic difficulties. In this context the development of peri-urban areas in a sustainable way that takes into consideration the needs of the local population and proposes economic activities in accordance with the local characteristics offers a second life to places that were underdeveloped and neglected for several years due to socio-economic problems. Our hypothesis is that the development of neglected peri-urban areas in a sustainable way and their subsequent integration into the regional and national economic channels fabric is not only a measure towards environmental and economic sustainability and resilience, but it can also serve as a measure to solve social

conflicts as underdeveloped peri-urban areas are places for activities of regional and national interest such as research labs and tourism facilities.

Another point to underline in contemporary practices for the strategic development of peri-urban areas, related to cultural geography and to the protection of peri-urban and cultural landscapes, is the planning of a certain category of these areas, the ones that have a significant number of historical landmarks and natural landscapes, as a measure that protects small communities with particular ethnological characteristics. In areas where the cities' limits are expanded towards their surrounding peri-urban spaces historical landmarks and natural landscapes cannot be usually identified as they seem to be part of the urban fabric, while the bad connection of these spaces with the national road network and the absence of signage creates disconnection conditions. Peri-urban spaces like small villages and communities as well as regional and national environmental parks which have a significant historical and ethnological value (presence in the area of minorities and historical buildings and monuments) and which are not easily reachable by car, train and bus, seem to improve the inhabitants and visitors experience in understanding the different historical eras of cities and their surrounding spaces. Taking this into consideration, our third hypothesis is that the development of peri-urban spaces in areas characterised by their unique historical, cultural, ethnological and environmental identities could act as a measure for a new regional branding, when they are well connected with the national road network, and thus lead to the discovery of unknown areas that have a significant importance in the development of their regions.

The analytic method was used in order to identify first the reasons that lead to economic decline and social injustice in several small and medium-sized cities and make the necessary correlation between environmental sustainability, economic growth and social equity for the development of these areas. In second place we developed our strategy and model for the development of peri-urban areas near small and medium-sized cities facing socio-economic difficulties based on their transformation in a sustainable way which takes into consideration the local social, economic, environmental and cultural characteristics. The method proposes an experimental approach in the planning of peri-urban areas and their relationship with the surrounding cities based on the case study of "Stena tou Nestou", (which in English could be translated as narrow pathway near the Nestos River) a peri-urban area located near the city of Xanthi in Northern Greece. Our proposal was developed during an urban and landscape design studio named 'Landscape and Architecture' at the School of Architecture of Democritus University of Thrace. The studio emphasises on the development of peri-urban natural spaces, located near small and medium-sized cities with important social and ethnological characteristics, through small-scale economic activities such as tourism, culture and research activities that lead to sustainability and resilience conditions. At the same time semi-structured interviews were conducted with local elected officials and inhabitants in order to take into consideration their needs and expectations for the development of these peri-urban spaces. We suggested a development scenario for the peri-urban space 'Stena tou Nestou' located near the city of Xanthi, based on the principles of sustainable development (environmental protection, social cohesion, economic development) and the local cultural and ethnological landscape (presence of ethnic minorities and important historical elements from antiquity to present time). The development scenario focuses on measures such as: 1) the protection of the natural resources of peri-urban areas as a means to reduce the cities ecological footprint, 2) the revalorisation of significant cultural and natural landscapes such as regional parks and historical buildings and monuments as a means to protect and show the identity of these spaces, 3) the connection of peri-urban spaces with the national road network as a means to facilitate mobility and reduce disconnection as well as 4) the development of small-scale economic activities to boost tourism, recreation, sports practice and research as a means to reduce local unemployment rate and to lead to economic resilience and sustainability.

For the development of our scenario for the peri-urban area outside the city of Xanthi we took into consideration existing power dynamics of the city and its surrounding area as well as of the region of East Macedonia and Thrace in which administratively is part the city of Xanthi. It is important to mention that the region of East Macedonia and Thrace is among the less developed at national (Greek) level and is characterised by deindustrialisation and the closure of local enterprises. Despite the above weaknesses of the region, the presence of Democritus University of Thrace (DUTH) in six cities of the region (Drama, Kavala, Xanthi, Komotini, Alexandroupoli, Orestiada),

including Xanthi, is among the strong points of the area as it brings people from other cities in a region affected by deindustrialisation and population decline. The presence of small-scale enterprises of regional interest in the sectors of agriculture and food products create the conditions for a development based on the local characteristics. The ports in the city of Alexandroupoli and Keramoti, a small town in the outskirts of the city of Kavala, the airports in the city of Alexandroupoli and Xrisoupoli, a small town in the outskirts of the city of Kavala, as well as Egnatia Odos, a highway that connects the north part of Greece with neighbouring countries (Bulgaria, Turkey) create the conditions for the development of the cities of the region based on commercial and retail activities. At the same time, peri-urban areas of the region are used as spaces for tourism facilities and research labs due to the environmental characteristics of the area. We should also mention the presence of important natural parks inside the region, including three Natura Zones in Evros, Rodopi and Xanthi (Nestos river delta whose part is 'Stena tou Nestou') which consist of its internal dynamics, and the presence of the Greek Muslim Community in the cities of Xanthi and Komotini posing challenges regarding the support of ethnic minorities and the enhancement of social cohesion through the development of peri-urban areas.

The case study: the city of Xanthi in the region of East Macedonia and Thrace in Northern Greece and the 'Stena tou Nestou' area

The choice of the case study was based on the necessity to reflect and change old narratives and discourses in the planning processes for poor urban and peri-urban areas and to propose a safe and equitable living environment for the inhabitants of these areas.

The city of Xanthi is located in the north part of Greece, in the region of East Macedonia and Thrace, with an area of 495.01 square kilometres (Greek Statistical Institute, 2015). It is built on the foot of Rhodope Mountain chain, close to the Nestos River (Figure 1). Based on the 2021 population census, the Municipality of Xanthi has 58,760 inhabitants (Greek Statistical Institute, 2021).



Figure 1. Xanthi's location on the map of Greece. In detail the cities of the Xanthi regional unit, whose capital is the city of Xanthi, and the neighboring regional units. Source: Greece-map.net

As most of the cities of the region of East Macedonia and Thrace, Xanthi is characterised by the diversity of its urban fabric combining neighbourhoods with a historical significance and architectural cultural value such as the Old Town (Figure 2) with contemporary city's expansions built during the 19th and 20th century (Figure 3). At the same time, we should note the continuity between the city and its neighbouring peri-urban areas as they are neighbourhoods inside the city's limits that are not fully urbanised, which have significant natural elements such as a small river and forests. Xanthi is characterised by its dense urban fabric especially in the neighbourhoods that were built during the Ottoman era while the rest of the city follows contemporary urban planning policies (presence of public spaces, tall buildings and large streets with pavements).



Figure 2. Xanthi's old town. In the photo we can see the neoclassical mansions of Greek merchants from the 18th and 19th centuries that characterise the old town of Xanthi. In the same city neighbourhood, we can find elements from the presence of the Greek Muslim Community in the area such as Ottoman-Era mosques.
Source: www.flickr.com



Figure 3. Xanthi's panoramic view. In this panoramic view of the city, we can distinguish in the front part of the photo the Old Town from the contemporary city that appears in the photo's background. At the right side of the photo, we can see the surrounding peri-urban spaces of Xanthi characterised by the presence of natural elements. Source: www.newsbreak.gr

After the Greek Turkish War of 1919–1922, the city of Xanthi entered a new era of prosperity and development due to the industrial, commercial and agricultural activities (Archaeology Newsroom, 2012). Xanthi became greatly involved and developed further in the processing and trading of tobacco mainly with European countries (Lantitsou, 2015). Many buildings related to the storage and processing of tobacco from that era are preserved in the city and act as landmarks of the city's past. During the last decades, tourism has also increased, especially during the period of the "Old Town Festival". As most of the Greek cities, especially small and medium-sized, Xanthi faces in the 21st century the consequences of deindustrialisation and the closure of local enterprises, despite the fact that the presence of university departments in the area increases the local inhabitants' incomes due to apartments' rentals.

“Stena tou Nestou” (in English it could be translated as narrow pathway alongside Nestos River) is a peri-urban area located near the city of Xanthi in the region of East Macedonia and Thrace in Northern Greece, an area that maintains its physical and social characteristics since the 20th century and which is nowadays used as a space for leisure and sports (natural regional park). It is important to underline the particular characteristics of the region of East Macedonia and Thrace as it is among the less developed at national (Greek) level, while at the same time the presence in the region of the Greek Muslim Community poses challenges regarding the just and peaceful transition towards a safe and equitable living environment for all despite their ethnic and cultural background. Our case study is located in a place with particular natural and historical characteristics and is part of the Nestos River delta, a Natura zone, while Nestos River is protected by International Water Law. The narrow pathway that crosses the peri-urban space ‘Stena tou Nestou’ was created in the 19th century to serve the workers who built the railway line connecting West European countries with the Ottoman Empire (Orient Express). The natural landscape is dominated by the river itself through the presence of water, the steep rock inclination, and the small sandy shores (Figure 4). The space has access by the small city of Toxotes while the hiking route inside this area connects the city of Toxotes with the city of Stavroupoli.



Figure 4. Natural and cultural characteristics of the ‘Stena tou Nestou’ peri-urban space. In the photo they are represented constructive elements of the particular landscape of ‘Stena tou Nestou’ such as the railway, which was part of the Orient Express, the pathway which is still used as part of a hiking route, Nestos River and the mountains of the region of East Macedonia and Thrace. Source: Varvara Toura

During our field research in the city of Xanthi and its surrounding areas and particularly in the ‘Stena tou Nestou’ peri-urban space we observed that the access to the ‘Stena tou Nestou’ area was only possible through the local road network that connects the city of Xanthi with small cities and villages of the Regional Unit of Xanthi. At the same time, vehicles are not allowed inside the ‘Stena tou Nestou’ area as it is a Natura Zone and there is a parking lot at the entrance of the park. Inside the park the only activities allowed are connected to recreation and sports practice while at the entrance of the park there is a small open-air café and restaurant (Figure 5).



Figure 5. The entrance to 'Stena tou Nestou' peri-urban space. The photo shows the first landscape unit of the park where recreation and sports facilities are found while at the left corner in the background is the area of the park where the café, the restaurant and the parking lot are located. Source: Varvara Toura

Outcomes-Results

The study of the region of East Macedonia and Thrace, of the city of Xanthi and its surrounding peri-urban spaces especially the 'Stena tou Nestou' area revealed areas with different characteristics. While the main cities of the region, the capitals of regional units, have a rather dense urban fabric and are well connected to the national road network, the peri-urban spaces are disconnected and have many unbuilt spaces. The main economic activities, such as commercial and retail activities as well as activities related to research and development, are located in the main cities of the region, leaving peri-urban spaces with activities related to agriculture and small-scale commerce. We can do the same remark regarding the revalorisation of the significant landscapes of the region, cultural and natural, as the ones located in the main cities of the region they are preserved and restored (for example the Old Town of Xanthi), while similar landscapes in peri-urban spaces are neglected (for example the train stations serving several of peri-urban areas) and not integrated in the development plans of these spaces. Despite this problem of abandonment and neglect of significant local cultural elements, we should highlight the fact that many peri-urban spaces of the region that have a significant environmental interest such as Nestos River delta and the 'Stena tou Nestou' peri-urban space are protected by International Environmental Law by being defined as Natura Zones. The expansion of the main cities of the region into the natural peri-urban spaces (we already described the urban development system of the city of Xanthi) due to the high demand for new housing poses problems in the protection of the natural resources of peri-urban areas and requires actions to reverse this phenomenon. The analysis of the interviews with local elected officials and inhabitants of peri-urban spaces of the region revealed the necessity to reconsider these spaces according to sustainability and resilience criteria as they are spaces with particular characteristics (there are still unbuilt spaces inside them and have significant natural and cultural elements) that could be developed through a model that takes into consideration the three parameters of sustainability (environmental protection, economic development, social cohesion) as well as the local cultural and ethnological identity (presence of ethnic minorities in the area).

Our proposal for the development of peri-urban areas located near small and medium-sized cities, focusing on the case study of the 'Stena tou Nestou' peri-urban space located near the city of Xanthi, was based on policies and tools to improve the main problems identified in the region. These policies focused on a development scenario of the Natura zone located inside the 'Stena tou nestou' peri-urban space which will be transformed into a research and recreation area, combining the existing facilities for sports practice and dining with new ones. These new facilities will host a small-scale research centre where researchers of the local Democritus University of Thrace and Athena research centre will work on issues related to biodiversity and environmental sustainability. The proposed facilities, which are located close to the pathway serving the visitors, will have spaces for the researchers (library and working spaces) as well as spaces for the visitors of the area such as a small café and living room, WC and a souvenir shop as a means to boost small-scale economic activities in an area facing socio-economic difficulties. The development plan for the 'Stena tou Nestou' peri-urban space as well as the activ-

ities and buildings inside its perimeter were decided together with the inhabitants of the area in order to foster the dialogue between professionals and citizens and to create the conditions for the public acceptance of our development plan for the peri-urban spaces near the city of Xanthi. The basic idea was to propose rather simple solutions, respecting the local identity and landscapes that could be easily adopted and implemented by the Region of East Macedonia and Thrace and the local Municipalities and to avoid complicated and expensive policies and tools. The economic activities proposed are linked to the local economic activities network and take into consideration the internal power dynamics of the region while the materials and the vegetation that were proposed in the new building inside the 'Stena tou Nestou' peri-urban space (wood, stone, ceramic tiles, pine trees) are all local in order to reduce the cost of the project in an area facing significant socio-economic difficulties.

Concerning measures for the connection of the 'Stena tou Nestou' peri-urban space with other areas of the region of East Macedonia and Thrace, we have already mentioned that the area is not connected to the national road network (Figure 6). In our development plan we considered important to facilitate the travels of the area's inhabitants and to make it accessible to visitors and people working on this area in order to facilitate mobility and reduce disconnection. Our proposal suggested the connection of the peri-urban space with the national road network (exit on Egnatia Odos towards the 'Stena tou Nestou' area) as well as signage boards on local and national road network especially for people who come to region for the first time.

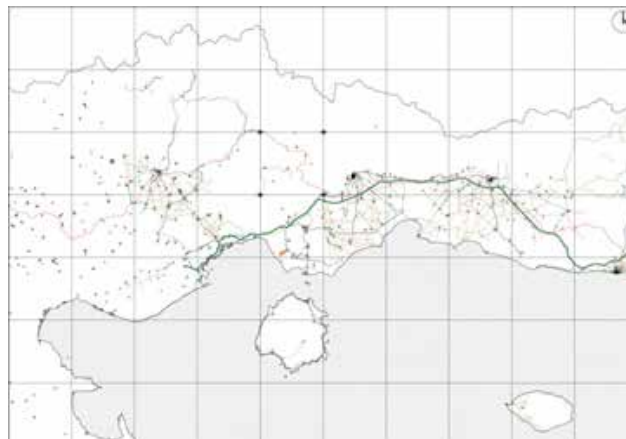


Figure 6. The main road network serving the region of East Macedonia and Thrace. The national road network serves mainly the cities of the region while peri-urban spaces are served by the local road network that connects cities with their surrounding spaces. Source: Alexandros Mpantogias

The 'Stena tou Nestou' peri-urban space is nowadays a space for recreation and sports practice (canoe kayak, hiking) in its area defined as Natura Zone, while the economic activities in villages and small cities in its perimeter such as Toxotes and Stavroupoli are primarily agricultural and commercial (Figure 7). As we have previously mentioned the region of East Macedonia and Thrace and particularly its peri-urban spaces struggle with the consequences of deindustrialisation and closure of local enterprises.

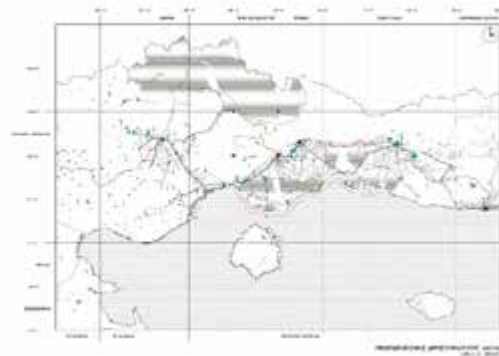


Figure 7. The main economic activities developed in the region of East Macedonia and Thrace. The areas marked in grey colour are protected areas such as Natura Zones while the industrial activities in blue colour are located near the national road network (Egnatia Odos). It is clear that the region struggles with the effects of deindustrialisation while in the interior of protected areas we can find a small number of houses.

Source: Alexandros Mpantogias

In our development plan for the 'Stena tou Nestou' peri-urban space we emphasised on the development of small-scale economic activities to boost tourism, recreation, sports practice and research as a means to reduce local unemployment rate and to lead to economic resilience and sustainability. The small research and recreation centre located inside the Natura Zone of the peri-urban space (Figure 8) highlights the importance of proposing economic activities that fit to the local cultural, social and economic landscape and create sustainability conditions based on the existing power dynamics of the area (the presence of Democritus University of Thrace).



Figure 8. The functions of the new research and recreation centre proposed inside the perimeter of the Natura Zone of the 'Stena tou Nestou' peri-urban space. In purple and red colour are the spaces for recreation, in blue the small souvenir shop for the visitors and an exhibition space while in green colour are the spaces that will be used by the researchers. Source: Alexandros Mpantogias

As we have previously mentioned the region of East Macedonia and Thrace is characterised by the dense urban fabric of the main cities of the region while there are many natural landscapes and environmental protected areas located in peri-urban areas (Figure 9). The cities' organisation and the land uses in their peri-urban spaces resulted from the arrival in the region of East Macedonia and Thrace of refugees from Anatolia region after 1923 (end of Greek-Turkish war) which had as a result the increase of housing needs inside cities and the use of peri-urban spaces as agricultural lands. In the years following the Second World War (1950 and 1960) and especially in the late 1970s several industrial units were built inside the perimeter of peri-urban spaces thus affecting their natural characteristics. In our strategy for the development of the 'Stena tou Nestou' peri-urban space

we emphasised on the protection of the natural resources of peri-urban areas as a means to reduce the cities ecological footprint. For this reason, we proposed the increase of vegetation around new buildings and in deindustrialised areas where in previous years there were active industrial units in order to restore the relationship between the natural and the built environment (Figure 10).

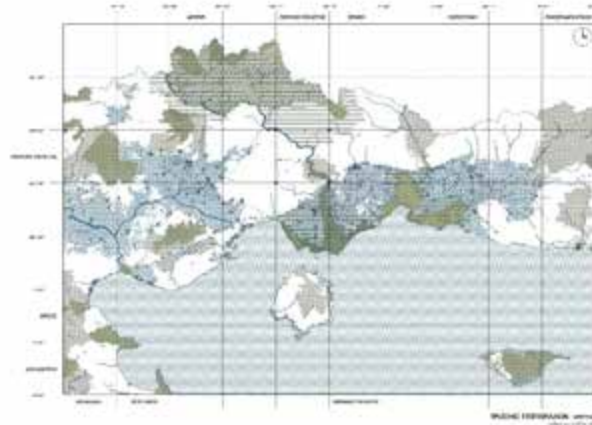


Figure 9. The natural landscapes in the region of East Macedonia and Thrace. The region is characterised by a significant number of natural landscapes including Natura Zones and zones protected by International Environmental Law. Source: Alexandros Mpantogias

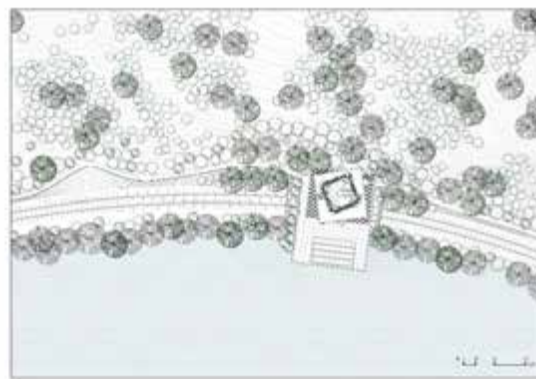


Figure 10. The proposed and existing vegetation (plants and trees) around the new research and recreation centre proposed inside the perimeter of the Natura Zone of the 'Stena tou Nestou' peri-urban space. Plants and trees around the new building are proposed as a means to restore the relationship between the natural and the built environment. Source: Alexandros Mpantogias

In our strategy for the development of peri-urban spaces we considered that the notions of sustainability and resilience are connected to peri-urban landscape where all phases of the region's cultural and natural history are present and repurposed alongside contemporary needs (small size economic activities) (Figure 11). The inscription of new buildings in these areas which host economic activities, is based on the understanding of the structural elements of the space and the protection of the natural and cultural landscapes. For this reason in our development scenario we proposed the co-existence on the same space of different elements (cultural, natural, contemporary architecture) which are connected through suitable vegetation (tall trees) and urban equipment (pergolas and benches) that highlight the unique historical characteristics of the above spaces and offer a different experience in the discovery of these peri-urban spaces (Figure 12).

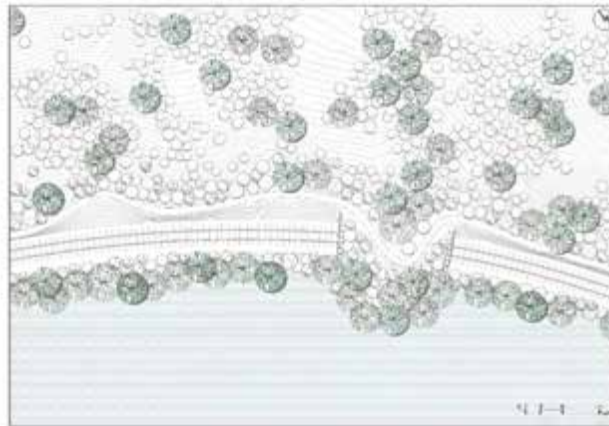


Figure 11. Significant cultural and natural landscapes inside the perimeter of the Natura Zone of the 'Stena tou Nestou' peri-urban space. The revalorisation of significant cultural and natural landscapes such as regional parks and historical buildings and monuments acts as a means to protect and show the identity of peri-urban spaces. Source: Alexandros Mpantogias

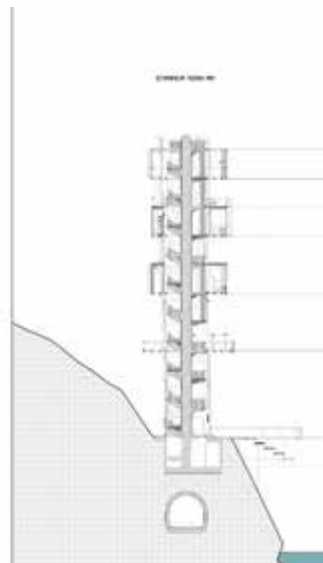


Figure 12. The inscription of the natural and cultural landscapes of the area in the planning of the new research and recreation centre proposed inside the perimeter of the Natura Zone of the 'Stena tou Nestou' peri-urban space. The new building is located close to the mountain and River Nestos offering a view of the Nestos River Delta while at the same time there is access to the train tunnels built in the 19th century.

Source: Alexandros Mpantogias

Discussion

The study of a real-world setting and its particular characteristics (socio-economic difficulties, environmental protected peri-urban space) revealed the necessity to consider planning in poor peri-urban areas as a transformative action which seeks to achieve sustainability goals through strategies and tools at different governance levels (national, regional, municipal) and in different sectors (economic, environmental, social, cultural). The development of peri-urban spaces in a sustainable way could act as a new narrative for inclusive urban and peri-urban transformations when local elected officials and inhabitants work together with researchers and practitioners in their planning processes and try to find solutions that fit not only to technical and legislative norms but also to the needs of communities. It is important to mention that this democratic procedure, which can sometimes take the form of co-decision and co-planning and not only inhabitants' consultation, in small-

scale development projects acts as a planning laboratory for the strategic design and testing of solutions that could later be implemented at regional level (the planning methodology and tools in a development project of a peri-urban space could also be used in development projects at regional level concerning housing policies, environmental policies and socio-economic policies). The cost of development projects in peri-urban spaces is an issue to consider when proposing development scenarios in small and medium-sized areas facing socio-economic difficulties. The discussions with local authorities and especially with the inhabitants allow to propose policies and measures that are closer to their expectations and needs, while the socio-economic analysis of the local regional, urban and peri-urban context allows to adjust these policies and measures to the economic dynamics of the area. Good strategies for the development of peri-urban spaces do not mean expensive and complicated technical solutions but rather proposals inscribed in the local social, economic, environmental and cultural peri-urban context.

Another issue to further consider through the planning of peri-urban spaces and their role in regions' development is the preservation of the local cultural and natural landscapes. We saw in the analysis of the case study and the subsequent development scenario for 'Stena tou Nestou' peri-urban space that the particular characteristics of the local landscapes are reflected in the planning of the peri-urban space. Landmarks from the previous land uses of the space (train stations), monuments and natural landscapes (mountains and rivers) that have shaped the region's history are not only living memorials of the different eras of the cities and peri-urban spaces but are also vital elements for contemporary strategic planning as they are often inscribed in national and regional development plans. Their integration on the development plans of peri-urban spaces, by giving an emphasis on the protection of the local cultural and natural landscapes, could lead to a new regional branding, especially when these spaces are well connected with the national road network (accessibility criteria), and to the discovery of unknown areas that had a significant importance in the development of their regions. Through these planning policies on peri-urban spaces, they could be identified significant landscapes, both cultural and natural, and define them as protection zones in order to protect them from mass-tourism and overscale construction projects that seem to not respond to the cultural and historical characteristics of these peri-urban areas. On the contrary small-scale economic activities such as recreation activities and research centres in accordance with the existing power dynamics of the areas could be found inside these spaces as they serve as measures for facing socio-economic difficulties (high unemployment rate).

To go further on the field of urban sustainability and resilience and the relationship between urban spaces and peri-urban spaces we should underline that measures and policies in favour of nature's protection in peri-urban spaces, such as the planning of national and regional parks and the definition of Natura zones in spaces with a particular ecological interest, should be proposed and implemented in peri-urban spaces close to dense urban areas based on the local characteristics of each area (cultural, environmental, social, economic). These measures and policies should put forward the relationship between the urban environment and its surrounding peri-urban spaces and try to find a balance between them in order to improve socio-economic and environmental conditions. At the same time urban planners and local authorities should carefully consider that the protection of the natural resources in the planning of peri-urban spaces could have positive effects on the cities functions as well as to water and air quality. Peri-urban spaces planning, organisation and functions based on environmental sustainability criteria could reshape urban and peripheral areas of the Mediterranean region that are exposed to extreme weather conditions (heat waves) during summer. For this reason, it is important to consider the planning of peri-urban spaces as a process inscribed in the fields of urban sustainability and resilience as peri-urban spaces like Natura zones and national and regional parks serve also as places for social encounters that boost citizens' health and well-being and solve social problems.

In many cases of neglected peri-urban spaces located near cities facing population shrinkage due to the swift in their economic model (former industrial cities), social problems appear after this swift related to the high unemployment rate. This local economic context combined with the loss of local population who moves in other areas in order to find work has as a result the recession of certain urban and peri-urban areas who are trying to find a new identity (social, economic, cultural) in order to increase their population and improve the living conditions

of the local population. Peri-urban spaces could play a key role in the development strategy of these areas, as we have previously seen in the case study of 'Stena tou nestou' peri-urban space located near the city of Xanthi a medium-sized city affected by deindustrialisation and the loss of local population. The creation of community conditions (people who have the same goals and needs), in urban and peri-urban spaces affected by economic recession, could be achieved through the planning of peri-urban spaces as these spaces act as places for social encounters where people with different social and ethnic backgrounds gather and spend time with other people. Research activities in these spaces focusing on the study of the local natural and cultural landscapes as well as activities related to sports practice and recreation bond the relationships between the inhabitants and their living environments and help them to act together as a group in issues related to social, economic and environmental policies of their municipalities and regions.

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