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The Dynamics of Regional Inequalities in Romania. Comparative Analysis between the major Crises – Financial and Sanitary

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ABSTRACT: In Romania, the issue of economic inequalities and regional convergence is one of the current important topics on which the attention of economic specialists and the decision-making factors is focused. In the actual context, the regional policy in Romania is implemented at regional level, the regions being formed by counties that have voluntarily associated on the basis of a convention signed by the representatives of the County Councils, respectively of the General Council of Bucharest. After the year 2000, the development regions faced two major crises: the global financial crisis (2008-2009) and the one caused by the COVID-19 pandemic (2020-2021). Both crises have caused important effects at regional level and both have been supported by a number of territorial strategies and policies, to which there was added the cohesion and regional development policy financed by the EU Structural Funds. The paper is based on the analysis of the differences between the regions of Romania, in the period 2008-2022, during the COVID-19 pandemic, by highlighting the differences between the dynamics of certain indicators, of the analysis of the GINI coefficients for measuring inequalities, trying to answer the question which of the two crises, financial or health, affected the level of territorial inequalities more and what was the evolution of the regions of Romania in these two sub-periods. Regarding the financial crisis versus the pandemic one, in the majority of the indicators, it was shown that the values of the Gini Coefficients in the 2020-2022 were higher than the ones in 2008-2010 and also after the COVID-19 crisis the tendency of increased disparities was maintained. The only domains that were least affected by the pandemic were demography (rural population), transportation infrastructure and economic potential (companies with 10-49 employees).

KEYWORDS: regional inequalities, convergence, GINI Coefficient, NUTS 2 Regions, COVID-19 pandemic crisis, economic-financial crisis

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1. INTRODUCTION

In Romania, the problem of economic inequalities and regional convergence represent one of the important current topics on which the attention of theoreticians but mostly of practitioners (the decision factor) is focused. Also, in the context of the integration in the European Union structures, the matter of convergence represents a particular interest which takes into account the size of the gap (economic, social, infrastructure, etc.) between the European Union regions and Member States.

After the year 2000, the development regions in Romania faced two major crises: the one from 2008 known as the global financial crisis and the one from 2020 caused by the COVID-19 pandemic. Both crises have caused significant losses at regional level and both have been supported by a number of

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territorial strategies and policies, to which there was added the cohesion and regional development policy financed by the EU Structural Funds. Also, the COVID-19 pandemic attracted a series of effects whose repercussions were felt on the level of territorial inequalities. Even though the health crisis has had an impact on all regions and sectors of activity, it seems that there have been areas that have done better, while some sectors have experienced real revigoration.

Three years after the emergence of the health pandemic and 12 years after the financial one, the counties economies are still going through a process of recovery and resilience. It is important to know which regions have recorded the largest losses and which are the economic sectors in these regions that have suffered the most. This information is useful for establishing directions and recovery measures and the most appropriate territorial policies.

During the financial crisis of 2008, many states had and needed financial help, which often took the form of loans from outside the country, which, over time, led to the increase in national debt. Increasing the state and private debt, but also spending money that the governments did not have are the causes that have contributed to raising the debt levels for many states.

The pressure borne by the citizens of a country in terms of public debt has also been supplemented by the pressure directly exerted by external creditors on citizens due to the amounts borrowed for the goods and services purchased. On the other hand, the global health crisis started in 2020 came with new constraints. The constraints generated by this new pandemic are multiple and have caused numerous problems at the economic, social and security level in all of the countries affected by it. The COVID-19 pandemic has highlighted, more than any global event or phenomenon, the reality that we live in an interconnected society; no country, no society, no community can address this issue alone.

The major systemic crisis, the pandemic is an attempt, an examination, for the current values and civilization, in their globality. It also highlighted the great vulnerabilities and structural dysfunctions of the current world and moreover of the discrepancies of the regions, in terms of the phenomenon of poverty and economic crisis, climate change, and migration crises or respect for human rights. It showed that globalization and progress can be reversible, that challenges affect all areas covered by the Sustainable Development Goals whose achievement is seriously threatened.

In the actual context, the regional policy in Romania is implemented through the development regions that contain counties formed by voluntary association based on a convention signed by the representatives of the county councils and the General Council of the Bucharest Municipality, respectively.

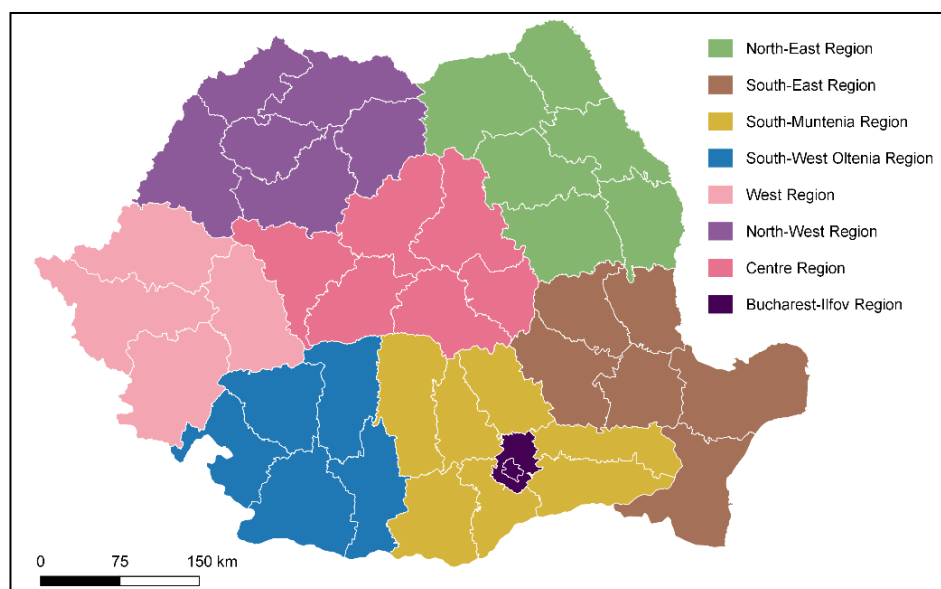


Figure 1. The eight development regions of Romania.

Source: Marin V.A., 2022

The context of analyzing inequalities and economic convergence is represented by the eight development regions (statistical regions) created after the accession to the European Union (in 2007).

These regions were established considering the potential functional integration criterion around some polarizing centers (Iași, Timișoara, Craiova, Constanța, Brașov and so on), corresponding to the NUTS 2 system of the European Union. Other criteria were taken into account as well in creating the regions, such as: resource complementarity, economic and social activities, functional links, etc. The eight development regions created in accordance with the Regional Development Law no. 151/1998 (amended by Law no. 315/2004), are presented in Figure 1 and Table 1.

The development regions represents "areas which correspond to county groups, established by their voluntary association based on agreement signed by the representatives of county councils, as well as by those of the General Council of Bucharest; regions represent the framework of design, implementation and evaluation of regional development policies, as well as collection of specific statistical data, in accordance with European regulations issued by Eurostat for the second territorial classification level, NUTS II, existing within the European Union" (European Parliament, 2023).

The regional policy in Romania is implemented by development regions, made up of counties formed by voluntary association based on a convention signed by the representatives of the county councils and of the General Council of the Bucharest Municipality, respectively.

Table 1. Development regions in Romania – NUTS 2.

Region code	NUTS 2	NUTS 3 regions (counties)
RO05	West	Timiș, Arad, Caraș-Severin, Hunedoara
RO06	North-West	Bihor, Bistrița-Năsăud, Cluj, Maramureș, Sălaj, Satu-Mare
RO07	Centre	Alba, Sibiu, Brașov, Covasna, Harghita, Mureș
RO01	North-East	Bacău, Botoșani, Iași, Neamț, Suceava, Vaslui
RO02	South-East	Brăila, Buzău, Constanța, Galați, Tulcea, Vrancea
RO03	South-Muntenia	Argeș, Călărași, Dâmbovița, Giurgiu, Ialomița, Prahova, Teleorman
RO08	Bucharest-Ilfov	Bucharest Municipality, Ilfov County
RO04	South-West Oltenia	Dolj, Gorj, Mehedinți, Olt, Vâlcea

Source: Eurostat, 2023.

The paper analysis the regional inequalities of the development regions in Romania (presented above) during the periods 2008-2010 and 2020-2022, based on several direct and derived indicators specific to some economic fields of activity.

The article tries to identify the impact of the financial and sanitary crises upon the level of development of NUTS 2 regions (Eurostat, 2022). We are trying to answer the question: which of the two crises affected the level of territorial inequality more and what happened over time with their evolution?

2. LITERATURE REVIEW

The issue of regional inequalities and the growth of social cohesion is systematically addressed by numerous universities and scientific institutions abroad, many of them of great prestige. The purpose of these studies is to provide policy makers with data and information relevant to the trends taking place in this field, which influence the level and evolution of inequalities at territorial level (Antonescu, 2004).

Traditionally, international and national economic analyses have explained the territorial inequalities on the basis of differences between regions in terms of natural resource potential, factors of production, infrastructure and technology as mentioned in multiple research (Ailenei & Dachin, 2007; Goschin et al., 2008, 2009; Constantinescu & Constantin, 2010; Boboc et al., 2012).

As mentioned by Benedek and Kurkó (2011) "an important role in the emergence and evolution of territorial disparities" begins with the unequal allocation of the economic factors. The economic and financial crisis was manifested by an unequal distribution of regional effects, depending on specific economic and social structures, the degree of regional specialization and other local factors. The impact of the crisis has been added to pre-existing regional problems, aggravating them (Goschin & Constantin, 2010; Ailenei et al., 2012).

During the years there were several approaches "regarding the relation between regional development and disparities" as stated by Kuttor (2009). After an in-depth study of the evolution of the

world economy, but also of the Romanian economy, we can see that the effects of the financial crisis that also started in Romania in 2008 brought special and difficult to anticipate effects on the momentary evolution and on a short term in the economy of our country. Romania, with a questionable strategy in terms of how the macroeconomic priorities were set, was unable to cope with the crisis that came as a roller for the whole of Europe, especially for the Romanian economy. The economic relations were uncoordinated, the plan or better said the government program that was somewhat established on other conditions had the effect of bringing Romania into a rather delicate situation (Enache, 2015).

Romania, as a member of the European Union, should have had a concrete action plan that would also correlate with the EU's strategies in a period with such effects on the national economy. Romania had a program of sustainable economic growth in the short, medium and long term (Romanian Government, 2008), but unfortunately it was not sufficiently well established, correlated at macroeconomic level, this has caused an instability of the Romanian economy for the moment.

Even though Romania as a whole has benefited, in social and economic terms, from EU integration, the territorial disparities within the country have increased (European Commission, 2020) and they also took some new forms (Török, 2019). The local educational capital inequalities have shaped the successful absorption of EU funds, while fixed capital investments have targeted the most developed regions. The unpredictability of policies, the rigid administration, with complicated regulations for auctions, unclear distribution of responsibilities between national, county and local levels and the lack of regional administrative capacity remained bottlenecks for Romania in terms of using the opportunities offered by the EU's regional cohesion policies (European Commission, 2020). The competitiveness and cohesion reveals the effects of the transition period and of the economic crisis, both having enhanced the inter- and intraregional disparities; this happens because regional polarization is still very strong despite the policies tending to re-balance development opportunities (Mitrică et al., 2021a).

What should be changed in European regional policies to effectively reduce social and economic disparities in Romania is not only a technical issue of policy management, but also a broader political issue to bring to the center of attention, throughout the regional cohesion policies, some of the major sources of inequalities in Romania. "The regions have evolved and developed at a different pace" leading to discrepancies (Boldea, Parean & Otil, 2012). These in terms of productivity and income between the agricultural sector and the manufacturing industries should not be hidden behind the so much discussed about namely the rural-urban cleavage, but approached in relation to the green, sustainable, production, and with the prevailing forms of employment in these sectors.

Supporting the agriculture and the green jobs should also strengthen the labor regulations and collective bargaining, ensuring access to social security and subsidized services. Child poverty and the prospects for upward social mobility should not only be framed as problems of low income, but also as a historical result of past injustices endured by peasant families or other ethnocultural minorities. The school dropout and low educational qualifications should be seen as intrinsically linked to the long underfunding of public education and the shortage of qualified staff for inclusive education that offsets the disadvantages of socio-economic disadvantage. From an administrative viewpoint, the local capacity building and regionalization should be given a greater weight, taking into account the significant inequalities between regions that make national redistribution necessary.

The vulnerability level of the regions of Romania is divided into two parts: the southern and north-eastern regions mainly defined by a high and very high degree of vulnerability and the central and western regions marked by a medium and very low vulnerability level mainly due to the very low sensitivity factor; Cluj, Timiș and Hunedoara Counties are, after Bucharest Municipality, the less vulnerable (Mitrică et al., 2021b).

The COVID-19 pandemic has also exposed the existing and persistent health inequalities in our societies. This pandemic has had a strong impact on the lives of people living in deprivation or facing difficult socio-economic circumstances.

The pandemic is affecting the world's poorest and most vulnerable people and "assessing the poverty impact of COVID-19 is no trivial matter" as stated by Laborde, Martin & Vos (2021). Thus, the harsh and profound inequalities in the society and the ever-increasing differences already existing within and between countries have been revealed. In advanced economies, the mortality rate was the highest

among a few vulnerable groups such as the elderly, and in developing countries the most vulnerable categories (the elderly, people with medical conditions, children, migrants and refugees) risk being even more affected.

In 2020, the world was facing its worst economic recession since the Great Depression, with an expected drop in real GDP per capita of 4.2%. The international trade in goods was expected to decline by 13% to 32%. The most vulnerable countries were the ones affected most. The foreign direct investment was expected to decline by up to 40% in 2020 (United Nations, 2020).

In the context of the COVID-19 crisis, the global community is facing unprecedented challenges, as the pandemic is substantially transforming the world we know. The pandemic has abruptly halted the implementation of many sustainable development goals and in some areas has led to a reduction in progress. The crisis has affected all segments of the population, all of the economic sectors and all of the regions of the world. If the world had been on track towards the targets set out in Agenda 2030, then it would have been better prepared to face the pandemic.

Lately, there has been an increased interest for the regional research area, presented through the concentration analysis, with which it can be illustrated the intensity of certain phenomena on economic and social categories.

In addition, the concentration analysis allows the comparison of data between identical or different phenomena, starting from the same or different number of units, for the same year or different years, etc (Nijkamp, 2016). Given the above considerations, this article proposes an assessment of the degree of concentration/diversification in the developing regions of Romania, through a method commonly used by experts in the field: analysis of regional concentration/diversification degree. This method of analysis is also known by the name of Gini/Struck coefficients method.

In order to achieve the analysis, there were used statistical indicators that exist at regional level, clustered by main areas, so that it can be covered the whole range of economic and social activities of scientific interest: demography (total population, urban, rural), workforce (employees), economic potential, health, research, telecommunications, urban infrastructure, investment, regional GDP.

The interpretation of the results of this analysis considered the fact that a higher value of the concentration/diversification coefficients involves an increase in disparities at territorial level, while a lower value may reflect a balanced distribution of some general or specific activities/phenomena. Also, the interpretation of results took into consideration that Bucharest-Ilfov region is a major urban area, which may significantly affect the obtained results.

3. METHODOLOGY

The methodology proposed in this article is based on the analysis of regional disparities performed on the coefficients of concentration/diversification (also known as indexes of geographic distribution). The Gini coefficient (GC) developed by the statistician Corrado Gini¹ (1884-1965) is the most used measure of inequality. It is typically used as a measure of income inequality, but it can be used to measure the inequality of any distribution (Hasell, 2023). It measures inequality on a scale from 0 to 1, where the higher the value of the coefficient, the greater the level of inequality is. When it is computed as a percentage with values from 0 to 100%, then it is known as the 'Gini coefficient'. A value of 0 indicates perfect equality – where everyone has the same income. A value of 1 indicates perfect inequality – where one person receives all the income, and everyone else receives nothing. The interpretation of the concentration coefficients indicates that when the value is close to the zero there is a balanced distribution of the corresponding vectors' elements. The measurement of the concentration degree of an activity in a region is performed using the Gini/Struck coefficient (Antonescu, 2010).

The formula used to calculate the Gini coefficient (GC) is the following (1) (with values on the interval $[\frac{1}{n} * 0.5; 1]$ and n = number of observations):

¹ C. Gini developed the theory of dispersion in *Variabilità e Mutabilità* (1912) and the concentration ratio. This led to his most famous contribution, the Gini Coefficient, which is used in a mathematical formula to determine the measure of dispersion in a concentration.

$$GC = \sqrt{\sum_{i=1}^n p_i^2} \quad (1)$$

For normalization it is also used the corrected GC (CGC), also known as the Gini-Struck coefficient or as we are to mention it for simplicity in our analysis as the Struck Coefficient for which the following formula was used (2):

$$GSC = \frac{GC - \frac{1}{\sqrt{n}}}{1 - \frac{1}{\sqrt{n}}} \quad (2)$$

The analysis of the indicators on the concentration/diversification can indicate how the development regions of Romania are placed comparing the uniform and balanced distribution of economic results obtained. In order to identify the regional inequalities in Romania, in period 2008-2010 compared to 2020-2022, the Gini/Struck concentration/diversification coefficients method was used.

In the next table we gathered all the indicators that were analyzed in the next chapter. The computing techniques were as followed: dynamics and structural analysis, for the period 2010-2022.

Table 2. The indicators used in accordance to the analyzed domains.

Domain	Indicator	
Demography	Total population	Evolution, structure and dynamics
	Urban population	
	Rural population	
Workforce	Employees	
	Unemployed	
	Total employees	
Economic potential	Total active companies	
	Micro companies 0-9 employees	
	Small companies with 10-49 employees	
	Medium companies with 50-249 employees	
	Large companies - 250 employees and over	
Health infrastructure	Total Regional GDP	
	Physicians	
Transport infrastructure	Hospital beds	
	Total length of public roads	
Education	Total length of railways	
	Researchers	
	R&D expenses	
	Students	

Source: own processing of the indicators used.

The limitations of the study were comprised by the fact that most of the data that was gathered from the National Institute of Statistics from Romania through their Tempo-online database stops at the year 2022. Also, the fact that there were fewer indicators in 2008 that we could use thus leading to a lesser analysis was another limitation that we confronted with but in the future articles we will try and complete our study with new indicators. Another challenge is the fact that the Gini/Struck method is mostly used in national analysis and less in the regional ones by national organizations which have as a target a longer timeframe than we proposed for this article. Moreover, another challenge is due to the fact that the eight regions of development are comprised by counties that have major differences regarding their level of development which lead to discrepancies that affect the income level and their future territorial development.

4. THE ASSESSMENT OF REGIONAL INEQUALITIES. RESULTS AND DISCUSSIONS

At regional level, the concentration analysis was based on the two coefficients presented above (Gini/Struck), taking into account 10 groups of indicators, all of them gathered from the Eurostat database

(2023). If the value of the coefficients exceeded 0.3, there is a relative concentration that can be mentioned and considered, and if the value was close to 0.5, then we can speak of a high concentration.

The computations were made at regional level, considering the inherent limitations related to available statistical databases.

4.1. Population at regional level

The regional concentration analysis was based on the following statistical indicators: total population, population in urban and rural areas.

The analysis of the population at regional level showed that in 2008, the region with the largest demographic base was North-East, with 3.722 million inhabitants, followed by South-Muntenia (3.29 million inhabitants). The last place was held by the West region (1.92 million). In 2022, we find in the first place the same region – North-East (3.221 million inhabitants), followed by South-Muntenia (2.854 million inhabitants) and North-West (2.523 million inhabitants) (Figure 2).

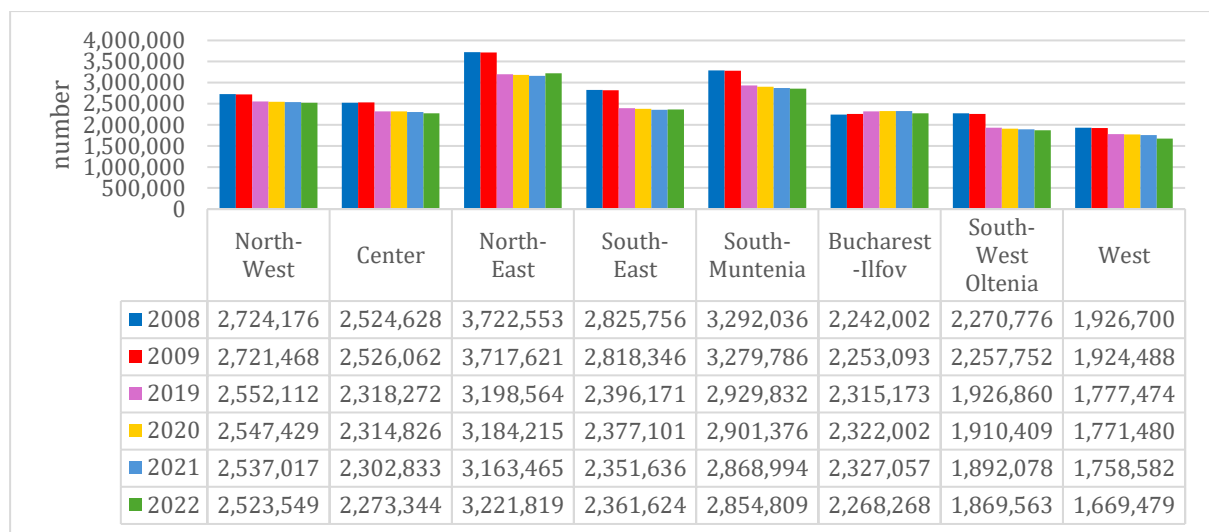


Figure 2. The evolution of the population at regional level, in Romania (no.).

Source: computed by the authors using Excel.

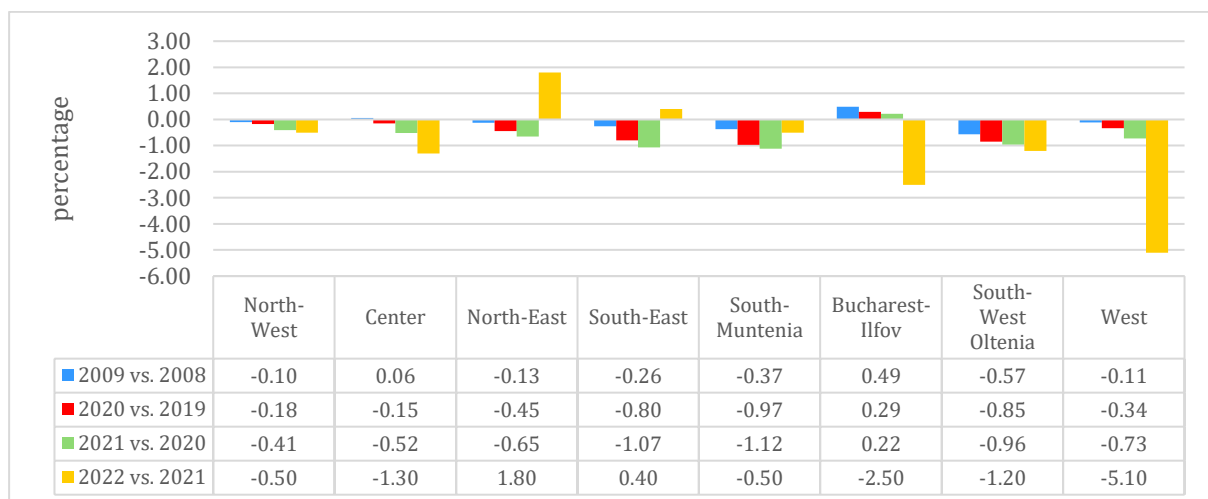


Figure 3. Dynamics of the population – comparative analysis (%).

Source: computed by the authors using Excel.

Comparing the two periods of crisis (financial and health), regarding the population, the crisis caused by COVID-19 has had a greater impact on the population at regional level. The only exception was the Bucharest Ilfov region, which experienced an increase in population in both periods. Interestingly,

regarding the health crisis, the declining demographic trend maintained in the following years, 2021 and 2022, with a sharper decline. There is a significant decrease in the population of the West region (-5.1%), followed by the demographic decrease in the Bucharest-Ilfov region (-2.5%). At the same time, there is an increase in the population of the North-East region of 1.8%, followed by the South-Muntenia region with +0.4% (Figure 3).

The analysis of the coefficients of variation at the level of the eight development regions indicates that, in the period following the financial crisis, from 2008 to 2011, their values were similar in both situations (with and without the Bucharest-Ilfov region). Since 2012, there has been a slight decrease in variation, with a higher amplitude in the case of coefficients that did not include the country's capital (Table 3). The health crisis of 2020 brought with it a decrease of the variance between regions (with Bucharest-Ilfov), while maintaining the values in the situation without the Bucharest Ilfov region at a value of 0.21. The years following the health crisis lowered the coefficient of variation to the same value from the financial crisis.

Table 3. Dynamics of Variation Coefficients in demography (number).

Variation coefficient	2008	2010	2012	2014	2016	2018	2020	2022
without Bucharest-Ilfov	0.220	0.222	0.208	0.208	0.209	0.209	0.207	0.224
with Bucharest-Ilfov	0.219	0.218	0.218	0.198	0.198	0.197	0.195	0.210

Source: computed by the authors using Excel.

In order to identify the trend of regional concentration and inequality, the Gini coefficient was calculated for the two periods of crisis. Thus, there is a slight tendency to reduce the concentration of demographics during the health crisis, but the value of the coefficient (0.106 in 2008 and 0.080 in 2020) isn't one to demonstrate that the regional population is predominant in one or more development regions (Figure 4) (there is no significant demographic concentration).

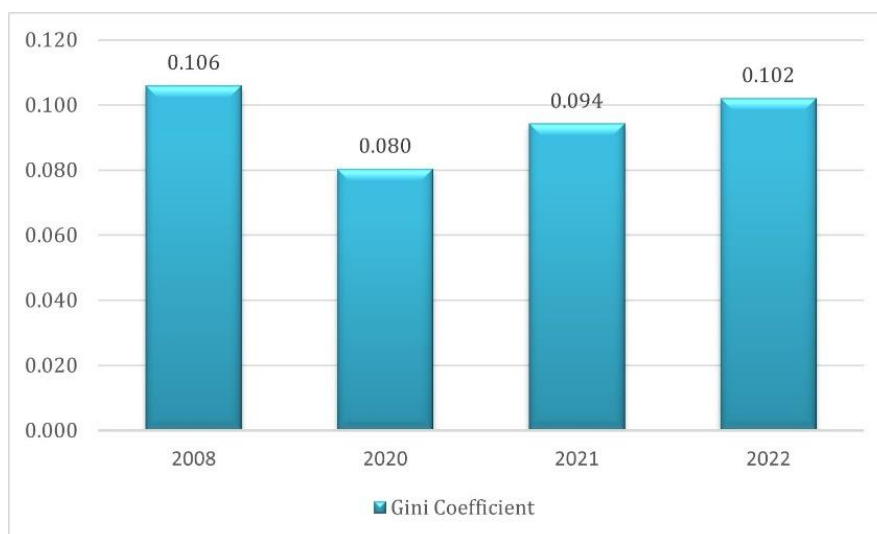


Figure 4. Dynamics of Gini Coefficients in demography, at regional level (number).

Source: computed by the authors using Excel.

The analysis of the existing data shows that, in 2008, at the national level, there was a predominantly urban population (55.04%), while at the regional level, five of the eight regions held most of the urban population (South-East, West, North-West, Center and Bucharest-Ilfov).

In 2020, the rural population in Romania was of 9,665,204 inhabitants, representing 50.004%, while the urban population was of 9,663,634 inhabitants (49.996%). The most urbanized region remains Bucharest-Ilfov with an urban population of 89.3%, followed by the Center (54%) and North-West (48.8%). In terms of rural area, it has the largest share in the North-East (68.1%) and South-Muntenia (62.2%) and South-West Oltenia (56.1%) (Figure 5).

There is a phenomenon of decrease in the degree of urbanization in the year of the pandemic – 2020 – compared to 2008 (Figure 5). An analysis of the last year found in the national statistics (2022) showed a tendency of increase regarding the degree of ruralization of Romania, reaching a value of 50.4%. Moreover, the Bucharest-Ilfov region had an increase of the rural population by 1 p.p. (from 10.7 to 11.6% - year 2020 compared to 2022) and the West region by 3 p.p.

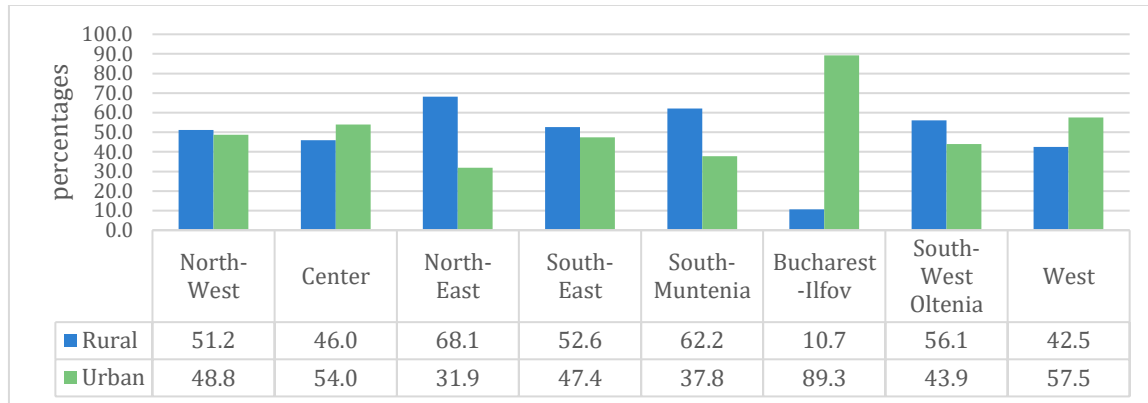


Figure 5. Urban – rural structure, at regional level, 2020 (%).

Source: computed by the authors using Excel.

The analysis of Gini/Struck coefficients at regional level shows that there is an easy tendency to reduce the concentration of the rural population, from 0.242 in 2011 to 0.231 in 2022, for Gini and from 0.180 in 2011 to 0.171 for Struck (Figure 6).

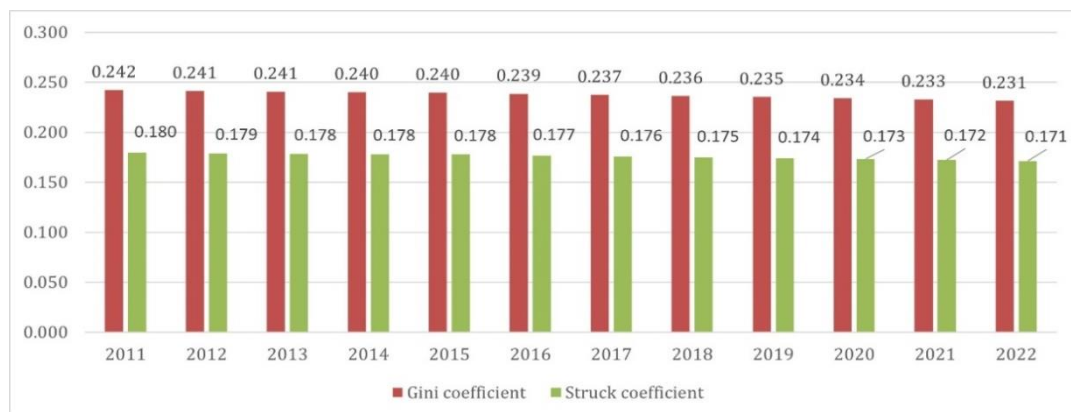


Figure 6. Dynamics of Gini Coefficients in demography, at rural regional level (no.).

Source: computed by the authors using Excel.



Figure 7. Dynamics of Gini Coefficients in demography, at urban regional level (no.).

Source: computed by the authors using Excel.

The decrease in concentration of the rural population was analyzed in parallel with a growing evolution of the concentration of the urban population (from 0.106 to 0.131 for the Gini coefficient and from 0.077 to 0.095 for Struck coefficient), in the period 2011 - 2022 (Figure 7).

4.2. Workforce

The analysis of the concentration of the workforce was based on the following indicators: employment in major economic sectors, number of employees and the number of unemployed.

In 2008, the level of Gini/Struck coefficients reveals that there is a low concentration of the employed population in the eight development regions, the value of Gini coefficient being around 0.114 and the value of Struck coefficient being only 0.083. Compared with 2000, there is an increase in the degree of concentration of employed population (the Gini coefficient was 0.095 and Struck coefficient was 0.069). There is a relative concentration of employed population in agriculture and forestry, the Gini coefficient being over 0.3 (the Gini coefficient is 0.341 and the Struck coefficient is 0.259), largely due to the importance of Bucharest-Ilfov urban region. In 2008, the first year of the financial crisis, there was increase regarding the concentration of employed population in services (the Gini coefficient is 0.138 and the Struck coefficient is 0.101), but there was a relatively high concentration in the two major categories of services: commercial (Gini coefficient is 0.343) and social (Gini coefficient is 0.335).

The scoreboard of employees' situation at regional level shows that in 2021, in Romania there were 5,096,309 employees (Figure 8), with 17.14% more than in 2011 (4,350,750 employees).

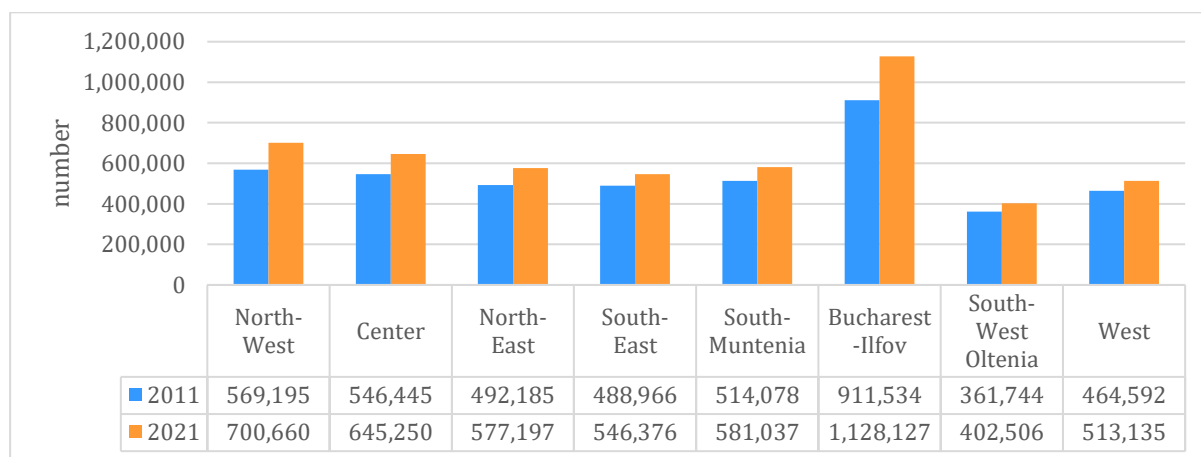


Figure 8. The number of the employees at regional level in 2011 and 2021 (no.).

Source: computed by the authors using Excel.

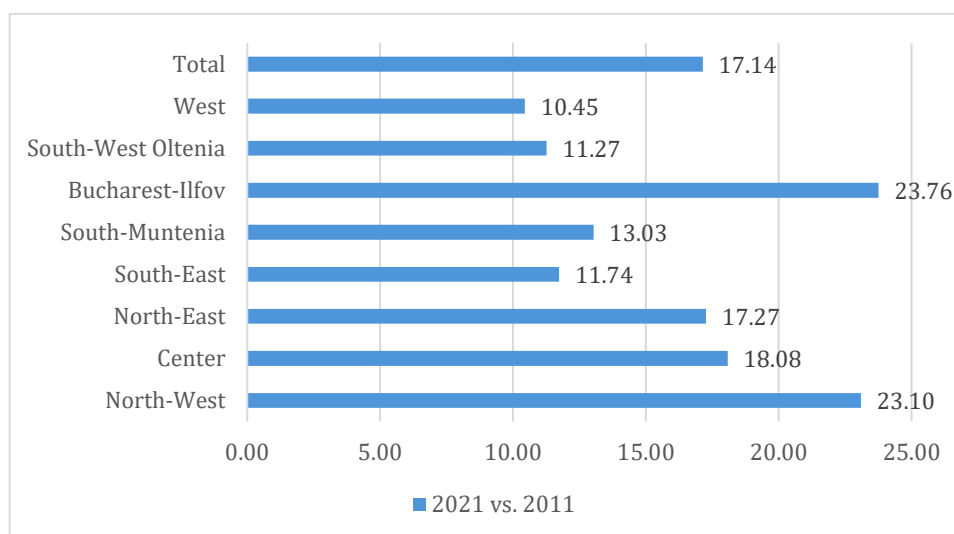


Figure 9. The dynamics of employees at regional and national level, 2021 vs. 2011 (%).

Source: computed by the authors using Excel.

The dynamics at regional level in the period 2011-2021 shows that the largest increases in the number of employees were registered in the regions: Bucharest-Ilfov (+23.76%), North-West (+23.1%), Center (+18.08%) and North-East (+17.27%) (Figure 9).

In 2020, the year of the health crisis, the value of the Gini coefficient increased slightly to 0.165, but without proving that there is a significant concentration at regional level. However, in the period 2011-2021, the evolution of the Gini coefficient was slightly increasing, from 0.143 to 0.164 (Figure 10).



Figure 10. The dynamics of Gini Coefficients in employees, at regional level (no.).

Source: computed by the authors using Excel.

Also, in correlation with the workforce, we continue to analyze the situation of the unemployed at regional level. Thus, according to Eurostat, in 2022 there were 239,064 unemployed people in Romania. As it can be seen in the chart below, their number showed a decreasing trend in the period 2010-2022. In the year of the health crisis, there is an increase in the number of unemployed by 38,186 people. In the following years, 2021 and 2022, the downward trend resumed, but at a lower level.

The evolution regarding the structure of the number of unemployed at regional level shows that there is a decreasing trend throughout the period in four of the eight regions. In 2010, the largest number of unemployed was registered in the South-East (17.72%) and in the North-East (16.31%), the least being in the Bucharest-Ilfov region. The year of the pandemic crisis led to an increase in the unemployed in the North-East, South-East, Bucharest-Ilfov and South-West Oltenia regions. The period after the COVID-19 crisis brought a decrease in the number of unemployed in five of the eight development regions. In 2022, the most people unemployed were in the North-East region (18.07%), followed by the South-West Oltenia region (16.67%) and South-East (15.91%).

Regarding the evolution of the Gini/Struck coefficients related to the number of unemployed, it was showed that there is no high concentration at regional level, their value being below 0.2. In the period 2011-2022, there is a slight tendency in the increase of the concentration, from 0.168 to 0.187. In the year of the pandemic crisis, the concentration decreased slightly, from 0.209 (year 2019) to 0.183% (year 2020) (Figure 11).

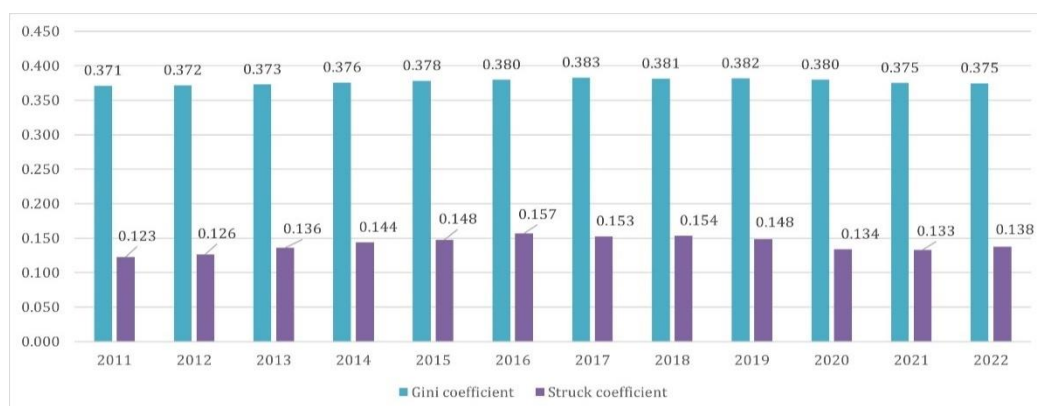


Figure 11. The dynamics of Gini Coefficients in unemployed, at regional level (no.).

Source: computed by the authors using Excel.

Regarding the decrease in concentration of the employed population and the increase of the unemployed in all of the regions in both of the crisis, this is due to the fact that Romania lacked some strong policies meant to support those with fragmented working lives and periods of unemployment and to facilitate the labor market transitions in the industrial and services sectors. Unfortunately, in these two sectors the policies implemented in those two periods, 2008-2010 and 2020-2022, failed to address the long-term precariousness of those employed in agriculture or in other sectors with strong seasonal fluctuations, such as construction.

4.3. Economic potential

In order to assess the concentration of the economic potential at regional level there were used the following indicators: the number of active firms at regional level, grouped by size and the number of employees.

In 2010, according to the Gini/Struck coefficients, the following situations were registered at regional level:

- There is a relatively low concentration regarding the total number of companies (the Gini coefficient is 0.189 and the Struck coefficient is 0.139);
 - There is a relatively low concentration of small companies (0-9 employees) and large companies (over 250 employees); the calculated coefficients having values below 0.20;
 - There is a relatively high concentration of companies with 50-249 employees (the Gini coefficient is 0.201);
 - There is a low concentration of companies with 10-49 employees (the Gini coefficient is 0.176);
- Compared with 2008, the values of the two coefficients have registered a slight decrease; in 2021 all of the values were below 0.17.

In 2021, 668,973 active companies were registered nationally, with 101,827 companies more than in 2008 (567,146 active companies), their trend being one of growth (2008-2021) (Figure 12).

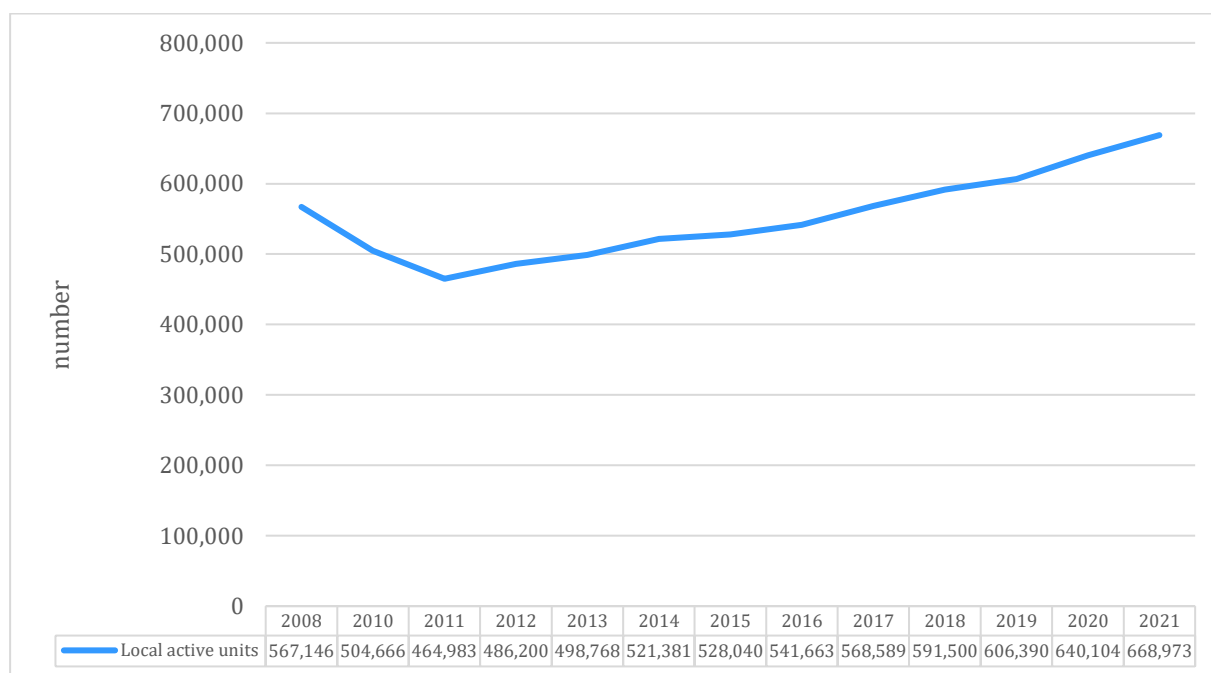


Figure 12. The evolution of local active units in Romania, 2008-2021 (no.).

Source: computed by the authors using Excel.

Next, we analyzed the regional structure of local active units, in 2008 and 2021. Most are found in the Bucharest-Ilfov region (23.7%), followed by North-West (14.95%). The fewest are found in the South-West Oltenia region (7.19%) and West (9%) (Figure 13).

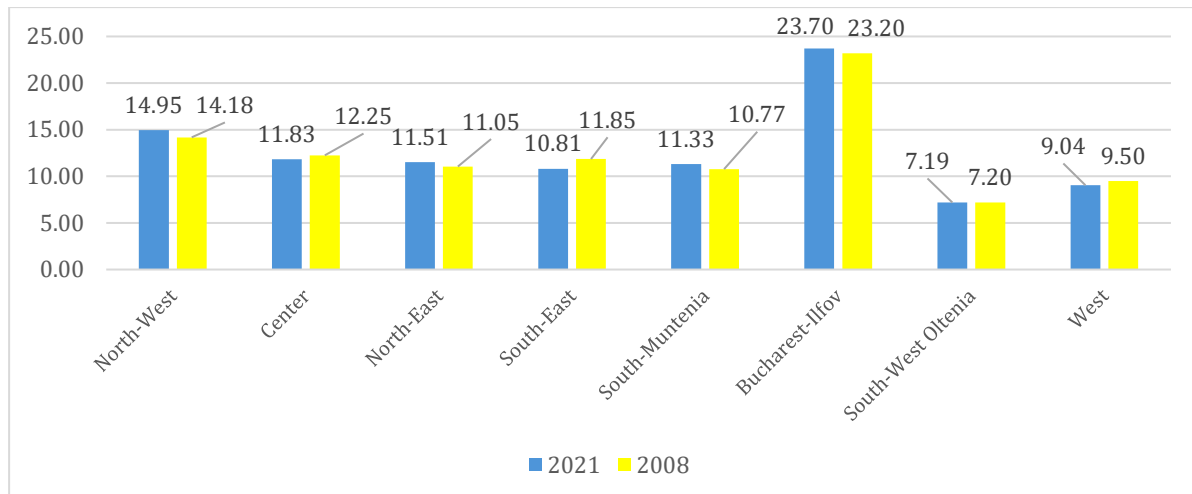


Figure 13. The evolution of structure of local active units at regional level, for 2008 and 2021 (%).
Source: computed by the authors using Excel.

The values of the Gini coefficient showed a slight upward trend, from 0.189 to 0.194, but without a significant concentration in terms of local active companies. The Struck coefficient revealed the same result with values between 0.139 in 2010 and 0.143 in 2021 (Figure 14).

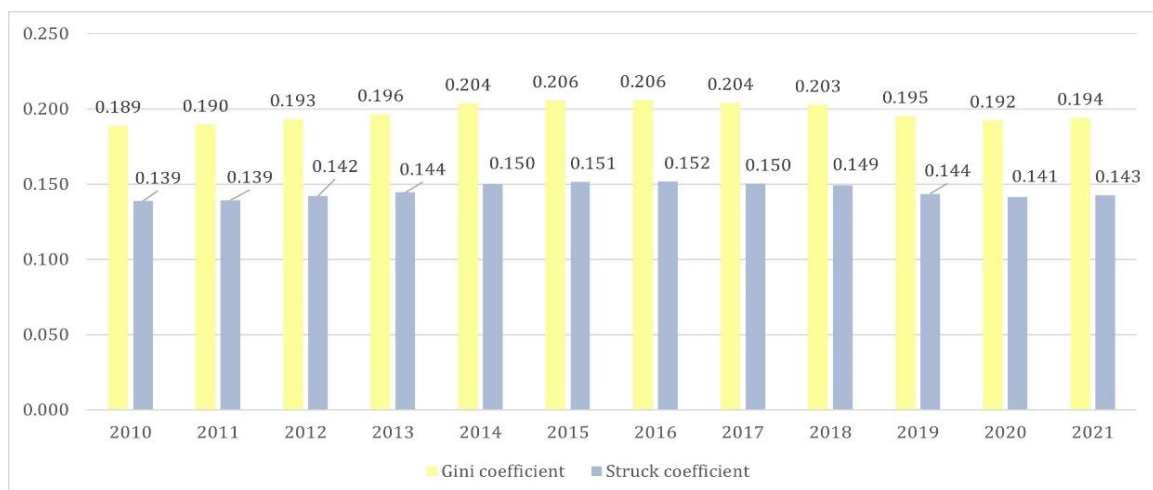


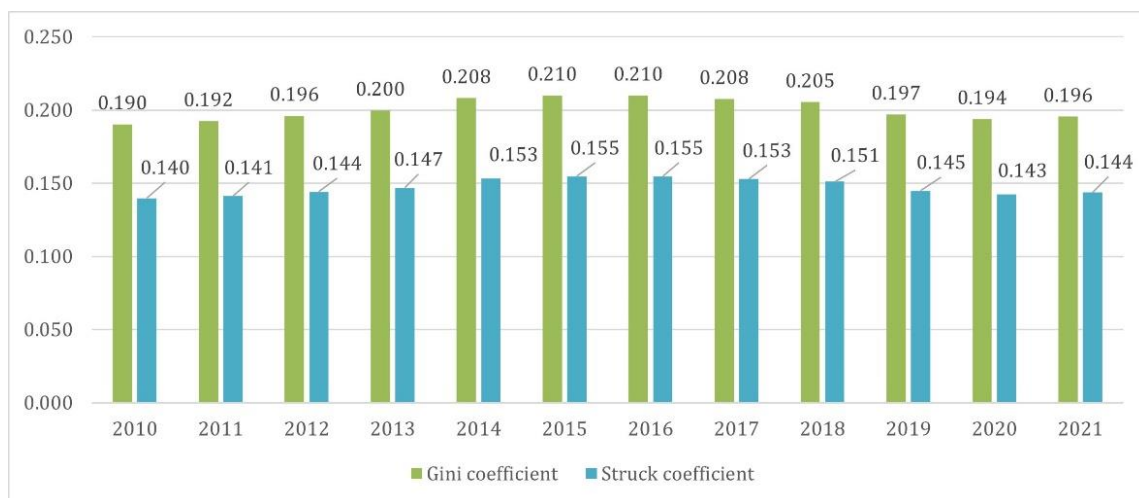
Figure 14. Dynamics of Gini Coefficients in local active units, at regional level (no.).
Source: computed by the authors using Excel.

Regarding the spread of the Gini coefficient for the number of companies that have employed between 0 and 9 employees there is a slight tendency of increase till 2016 from 0.190 to 0.210 followed by a one of decrease till 2021 when it registered a value of 0.196. The same thing is applied for the Struck coefficient with values of 0.140 in 2010, 0.1555 in 2016 and 0.1444 in 2021 (Figure 15 a). Both the results of the Gini coefficient and the Struck coefficient indicate a low level of concentration regarding the number of employees in microenterprises.

Regarding the number of small enterprises with 10-49 employees the situation is different then for the microenterprises both the Gini and the Struck coefficients registering variations in the entire timeframe but both of them demonstrated a low level of concentration as well (0.176 for Gini coefficient in 2010 vs 0.170 in 2021; 0.129 for Struck coefficient in 2010 vs 0.125 in 2021) (Figure 15 b).

In the case of medium enterprises with 50-249 employees there is registered a slight increase in the entire period of time regarding both the Gini coefficient and the Struck coefficient its values varying between 0.201 in 2010 and 0.231 in 2021 for Gini and 0.148 in 2010 to 0.171 for Struck. Although the increase in these coefficients is of 0.03 we can say that the tendency is of an increase in concentration for 2010-2021 (Figure 15 c).

The strongest increase regarding the concentration of the number of local active units for 2010-2021 was in the case of the large enterprises that have over 250 employees, the Gini coefficient registering an increase of 0.074 in 2021 (from 0.212 in 2010 to 0.286 in 2021) and the Struck coefficient had an increase of 0.058 (from 0.156 in 2010 to 0.214 in 2021) (Figure 15 d).



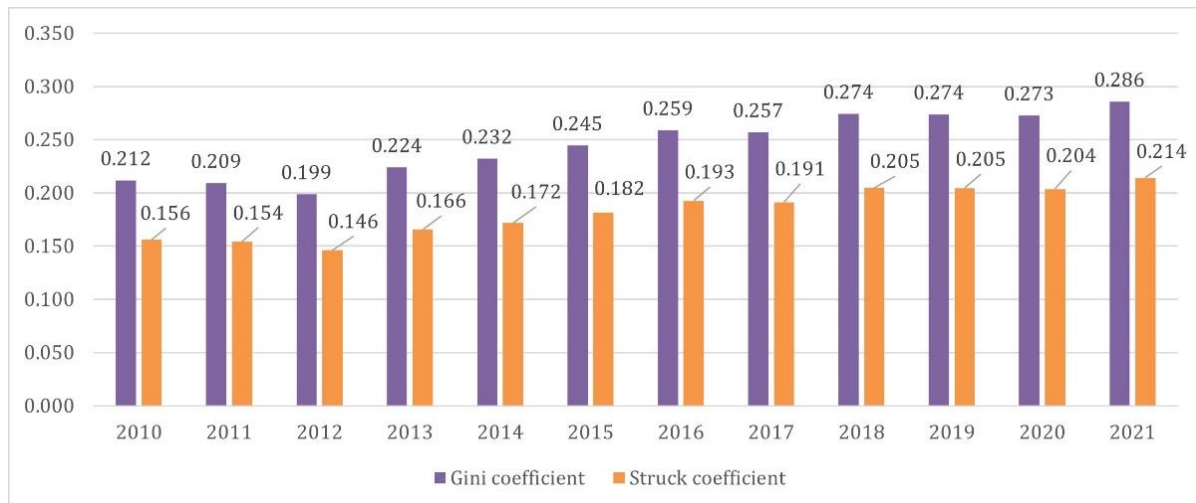
(a)



(b)



(c)



(d)

Figure 15. Dynamics of Gini Coefficients at regional level (no.): (a) in local active units with 0-9 employees; (b) in local active units with 10-49 employees; (c) in local active units with 50-249 employees; (d) in local active units with over 250 employees.

Source: computed by the authors using Excel.

The increase in concentration of the local active units is due to the fact that the majority of the larger companies are located in the developed cities which offer bigger possibilities to expand and to develop.

4.4. Health infrastructure

The analysis of the concentration in the health sector was based on the following specific indicators: the number of doctors in the region and the number of existing beds. In 2008, there is no significant regional concentration (the values of the two coefficients are below 0.3). Compared with 2000, there is a relatively small increase in the concentration of health infrastructure at regional level, especially regarding the number of beds (from 0.08 to 0.1) and the number of doctors (from 0.10 to 0.18). This increase may be due to the concentration of this sector in large urban centers and in the Bucharest-Ilfov region (which held about 23% of the total number of doctors in Romania and 16% of the number of beds).

Regarding the concentration of healthcare staff (doctors), in the period 2011-2022, there is a slight increase in the value of Gini/Struck coefficients, from 0.177 to 0.221 and from 0.130 to 0.163 (Figure 16).

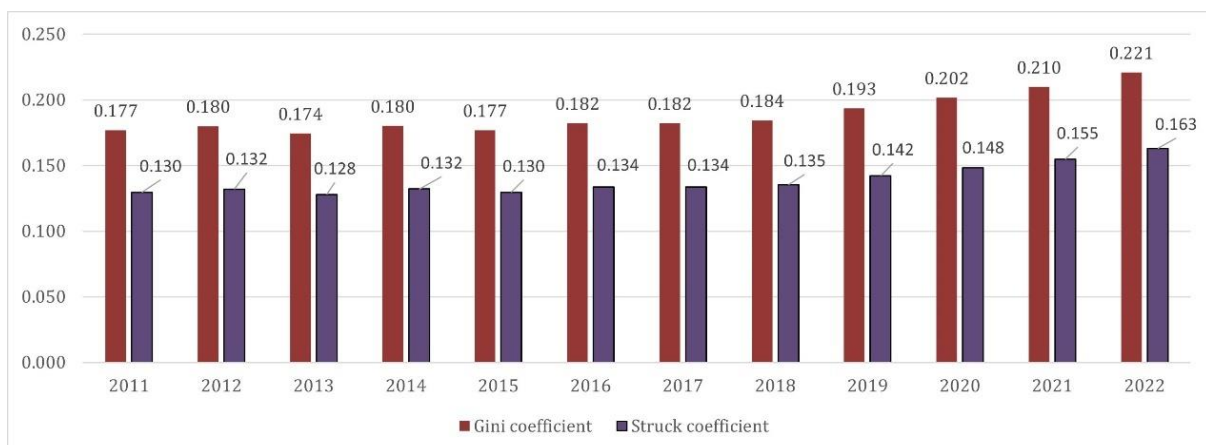


Figure 16. Dynamics of Gini Coefficients in Healthcare staff (no.).

Source: computed by the authors using Excel.

Analysis of Gini/Struck coefficients of the number of beds shows that there is no increased concentration, although there is a slight upward trend in 2011-2022 (Figure 17).

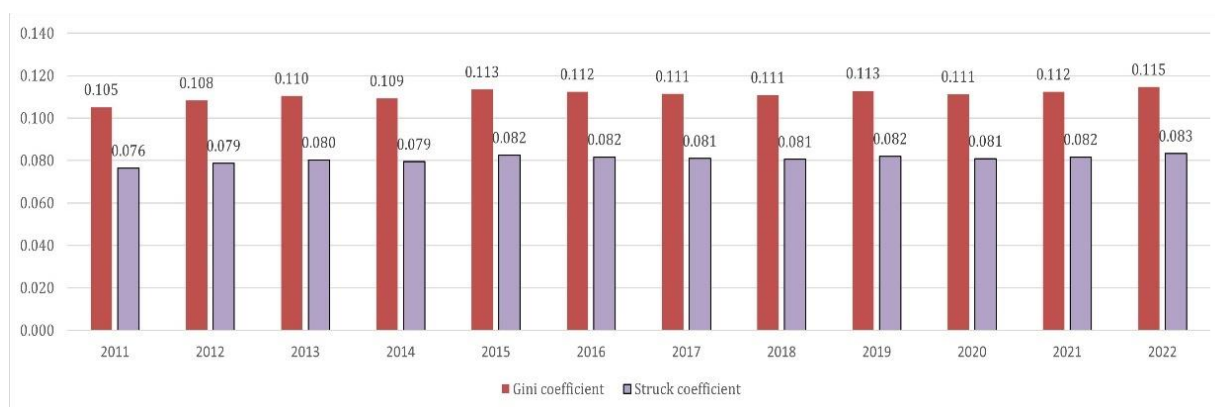


Figure 17. Dynamics of Gini Coefficients in Number of the beds from sanitary units (no.).

Source: computed by the authors using Excel.

Between 2010 and 2022, the number of doctors increased from 52,204 to 71,293 (+36.6%), while the number of beds increased by only 3% (from 132,004 to 135,917) (Figure 18).

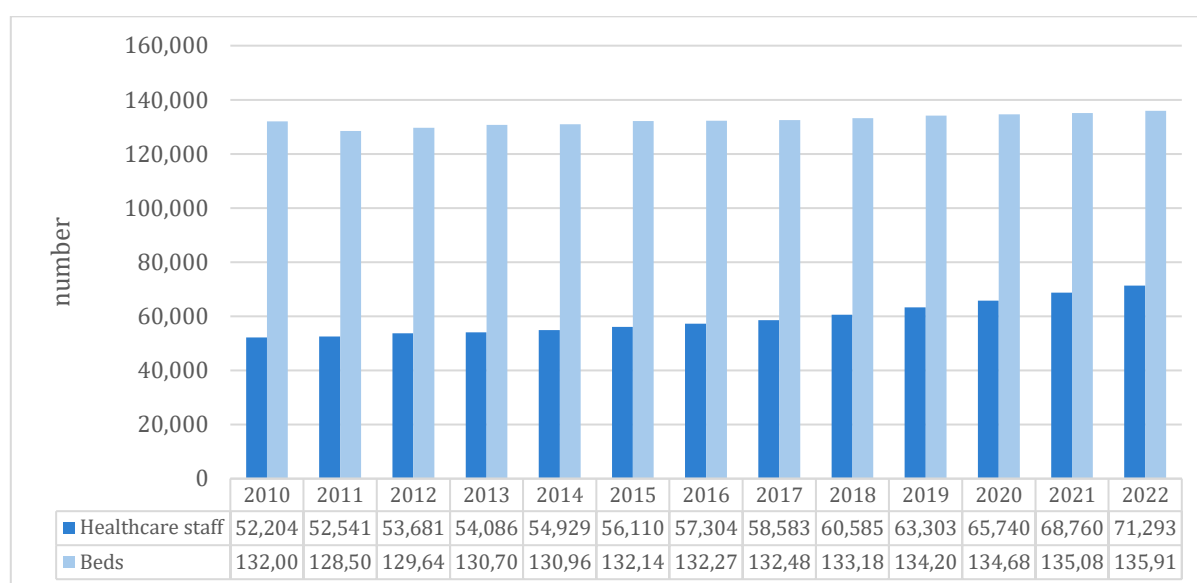


Figure 18. Dynamics of Healthcare staff and Beds in Romania (no.).

Source: computed by the authors using Excel.

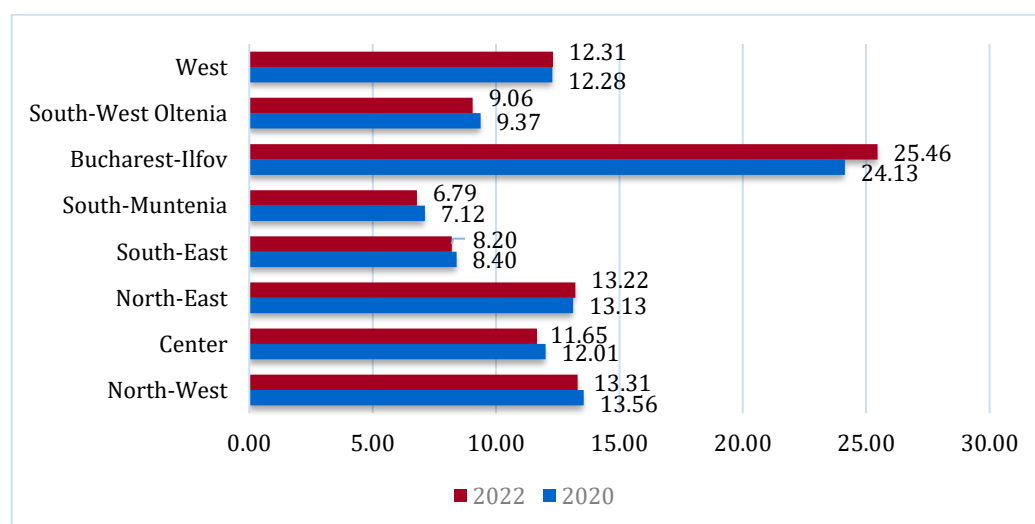


Figure 19. Regional structure of medical staff (doctors) (%).

Source: computed by the authors using Excel.

At the regional level, in 2022, the majority of the doctors are in the Bucharest-Ilfov region (25.5%), increasing compared to the pandemic year, when it registered a share of 24.13%. The following places are held by North-West (13.3%), North-East (13.2%) and West (12.3%). After the pandemic, some regions lost medical staff (doctors): South-Muntenia, North-West, South-West Oltenia and South-East (Figure 19).

There was registered a slight increase regarding the concentration of the doctors in each region due to the fact that once with the increase in their salaries this job was pursued by more and more youngsters and some of doctors even returned from abroad to work in the Romanian hospitals.

In terms of the number of beds, it remained constant in the two analyzed years, in all of the regions (Figure 20).

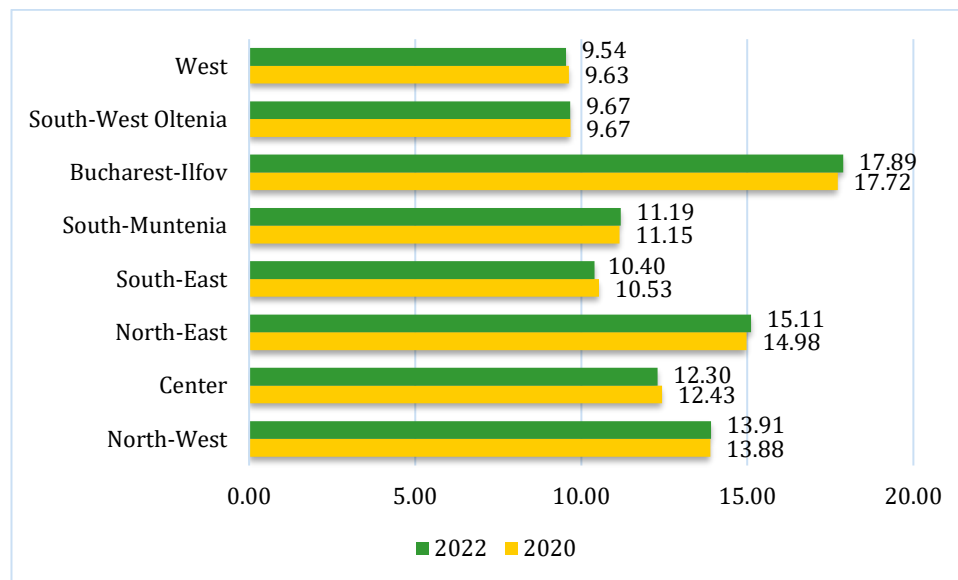


Figure 20. Regional structure of medical infrastructure (beds) (%).
Source: computed by the authors using Excel.

4.5. Urban infrastructure

Given the importance and complexity of this area, but also the existence of an increased volume of specific data, for the computations of the degree of concentration/diversification of the sector on development regions, several key indicators were used:

- railway lines;
- the length of public roads.



Figure 21. Dynamics of Gini Coefficients in railway network length under operation (no.).
Source: computed by the authors using Excel.

In 2008, there was registered a slightly lower value for the railway lines and public roads indicators, the Gini coefficient value being under 0.20. In this case, the regions that registered high percentage values: the West region, which owns 18% of the total railway lines, and the North-East region, which owns 17% of all urban public roads. Compared with 2000, there is an increase in the concentration of all examined indicators (Antonescu, 2010).

In the period 2011-2022, for the railway network length in km, the Gini coefficient decreased from 0.187 to 0.170 and the Struck coefficient from 0.137 to 0.125 proving a low level of concentration (Figure 21).

Both the Gini and the Struck coefficients for the length of public roads showed a small level of concentration in the entire period of time, their values being almost constant (0.187 and 0.137 in 2011 and 0.1888 and 0.138 in 2022) (Figure 22).



Figure 22. Dynamics of Gini Coefficients in Length of public roads (no.).

Source: computed by the authors using Excel.

At the national level, in 2022 there were 10,615 km of railway network under operation and 86,336 km of public roads (Figure 23).

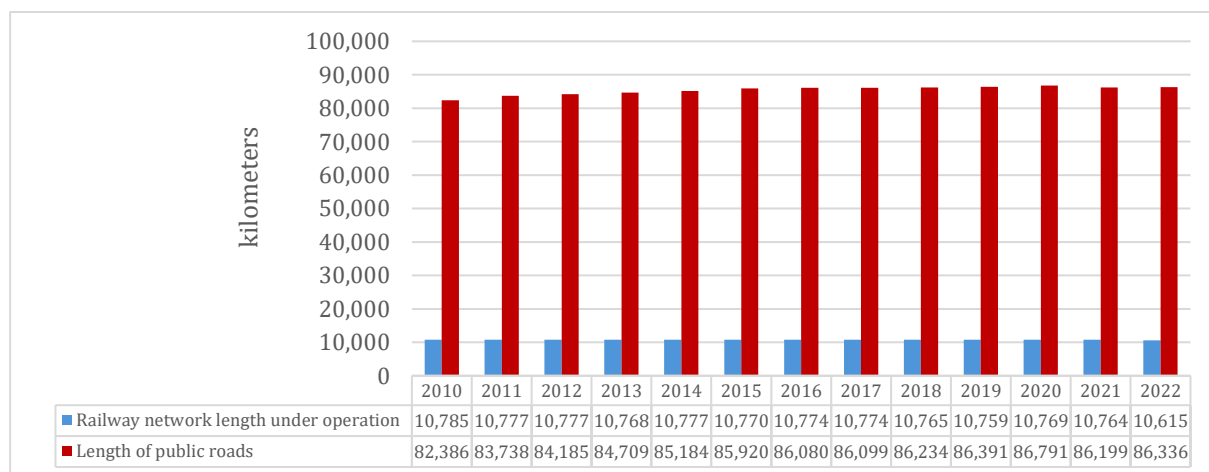


Figure 23. Infrastructure at national level, 2010-2022 (km).

Source: computed by the authors using Excel.

For the year 2022 on a regional level the region that has the largest number of railway network length under operation is the West Region with 1,922 km, followed by the North-West Region with 1,636 kilometers and the South-Muntenia Region with 1,511 kilometers. Regarding the length of public roads, the first place is occupied by the North-East Region with 14,975 km, followed by the South-Muntenia Region (12,938 km) and North-West Region (12,754 km). The region that registered the lowest number of km in both cases was Bucharest-Ilfov with 372 km for the railway network and 901 km for the length of public roads (Figure 24).

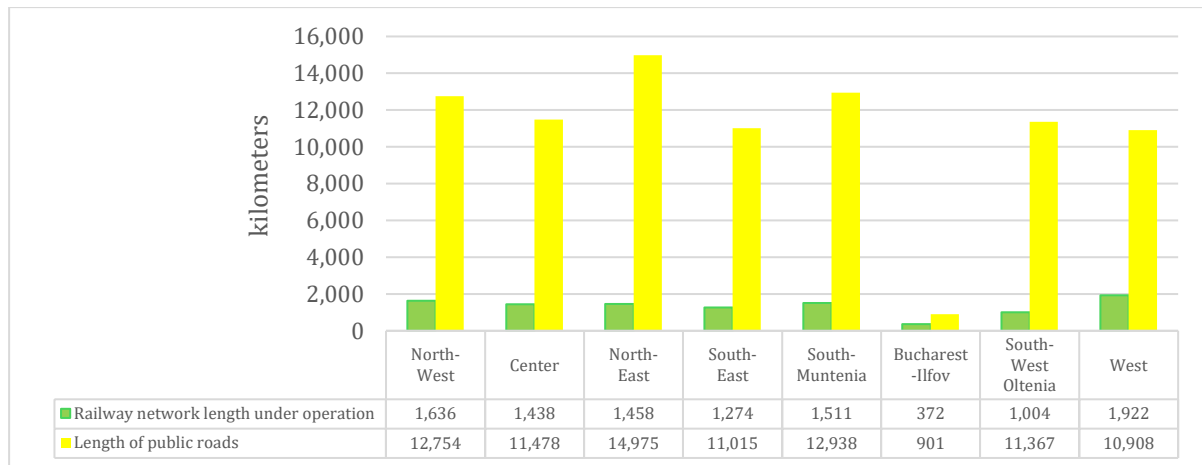


Figure 24. Infrastructure at regional level, 2010-2022 (km).

Source: computed by the authors using Excel.

4.6. Education and research

Due to the fact that Bucharest-Ilfov region holds approximately 32% of the total higher education institutions and 47% of the researchers, the values of Gini/Struck coefficients were higher than those registered by the other indicators examined so far.

Thus, in 2008, in this area, the majority of the indicators that have been analyzed have recorded significant concentrations at regional level, the exception being the number of universities/faculties index, whose coefficient was below 0.3 (Gini coefficient was 0.260) (Antonescu, 2010). There was registered a high concentration both in the Gini and Struck coefficients for the year 2021 regarding the number of researchers with values of 0.546 and 0.445 showing an oscillatory tendency then the first year mentioned in the analysis, 2011 when the values were 0.591 and 0.491 and the entire timeframe (Figure 25).

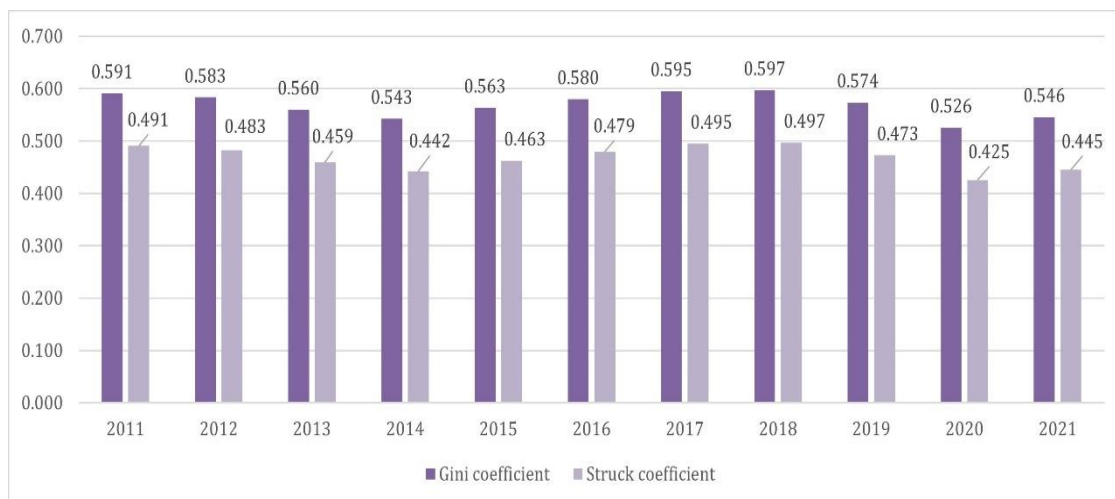


Figure 25. Dynamics of Gini Coefficients in Employees from research - development activity (in full time equivalent), 2011-2022 (no.).

Source: computed by the authors using Excel.

For the number of students, the Gini coefficient was in 2020, 0.351 and the Struck coefficient was 0.267 demonstrating a medium level of concentration and a small increase from the year 2011 when the values were 0.330 respectively, 0.250 (Figure 26).

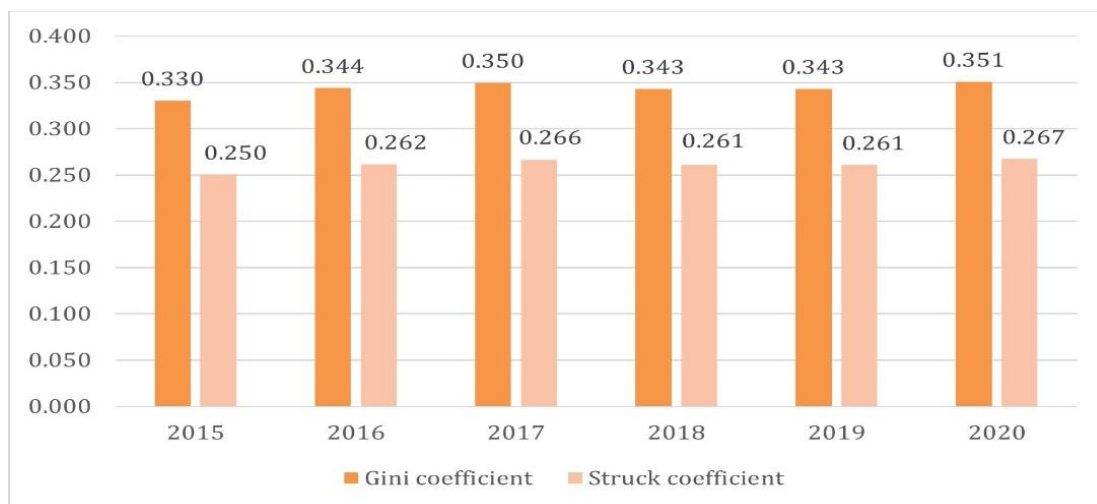


Figure 26. Dynamics of Gini Coefficients in Students, 2015-2020 (no.)

Source: computed by the authors using Excel.

The highest concentration was recorded by the total research expenditures from research and development activity (Gini and Struck coefficients were 0.622 and 0.523 in 2011 and 0.606 and 0.506 in 2021) (Figure 27).

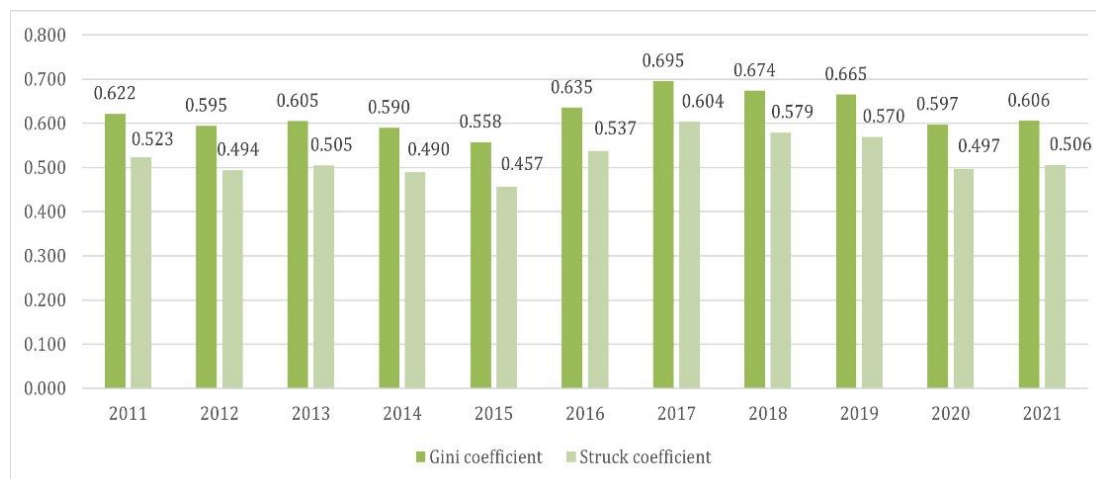


Figure 27. Dynamics of Gini Coefficients in Total expenditure from research-development activity, 2011-2022 (no.).

Source: computed by the authors using Excel.

The decrease of concentration and the persistence of inequalities regarding education is due to the context of the transfer to online learning because of the COVID-19 pandemic, the worsening of inequalities regarding the access to education is due to lack of digital equipment and Internet access, but also of the material conditions at home, as well, given that many families live in overcrowded households that make it difficult for children to attend virtual classes.

The decrease of concentration in research is due to the fact that this is a domain poorly funded with financial resources allocated being of 2.22% of the total GDP of Romania (Eurostat, 2023).

4.7. Regional concentration of GDP

The evolution of total GDP indicator concentration was calculated for the period 1995-2008. In 1995, the regional GDP concentration was very low, the Gini coefficient being 0.066. The difference between the highest and lowest value of the regional GDP was between the South-Muntenia and South-West Oltenia region, including West (22%). In 2000, there is a first clear trend of increasing concentration, the Gini coefficient reaching 0.142. When computed for year 2008, the Gini coefficient registered a value of 0.172, which means a relatively low concentration of total regional GDP (Antonescu, 2010).

In the period 2010-2020, the total GDP increased from 0.205 to 0.240. It is an average concentration of this indicator at regional level, with a clear growth trend (Figure 28).

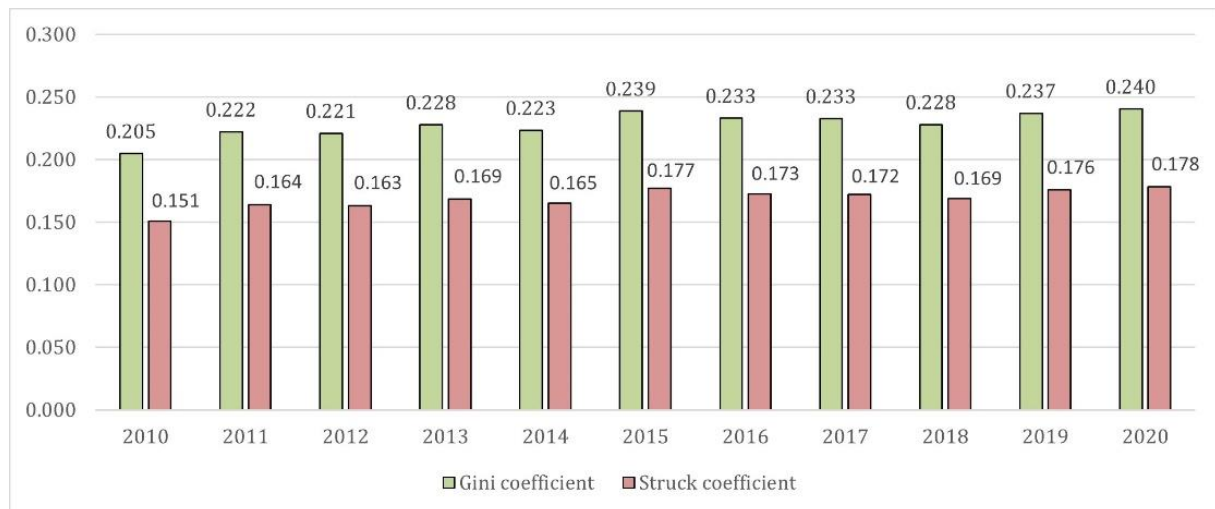


Figure 28. Concentration of regional GDP, 2010-2020 (no.).

Source: computed by the authors using Excel.

It is worth mentioning that the Gini coefficient in the case of researchers and the R&D expenses reached a level of higher inequality in 2022 than it was in 2020. The regional concentration had a greater amplitude during the health crisis, which leads to the idea that the territorial inequalities increased during the pandemic (Table 4).

Table 4. The Gini coefficient values for Romania - years 2000, 2008, 2020 and 2022 (number).

Domain / Indicator	2000	2008	2020	2022	Tendency of concentration (2008 vs. 2020)
Total population	0.104	0.106	0.109	0.111	<i>Has increased</i>
Urban population	0.090	0.098	0.124	0.131	<i>Has increased</i>
Rural population	0.233	0.244	0.234	0.231	<i>Has decreased</i>
Employees		0.113	0.162	0.164	<i>Has increased</i>
Unemployed		0.165	0.186	0.120	<i>Has decreased</i>
Total active companies	0.152	0.189	0.192	0.194	<i>Has increased</i>
Small companies 0-9 employees	0.144	0.192	0.194	0.196	<i>Has increased</i>
Large companies - 250 employees and over	0.101	0.189	0.273	0.286	<i>Has increased</i>
Total employees	0.076	0.133	0.165	0.164	<i>Has increased</i>
Hospital beds	0.078	0.098	0.111	0.114	<i>Has increased</i>
Physicians	0.108	0.180	0.202	0.220	<i>Has increased</i>
Total length of public roads		0.200	0.187	0.188	<i>Has decreased</i>
Total length of railways		0.210	0.186	0.170	<i>Has decreased</i>
Total Regional GDP	0.170	0.172	0.240		<i>Has increased</i>
Companies with 10-49 employees	0.144	0.490	0.169	0.171	<i>Has decreased</i>
Researchers		0.494	0.526	0.546	<i>Has increased</i>
R&D expenses		0.464	0.597	0.606	<i>Has increased</i>
Students		0.471	0.351		<i>Has decreased</i>

Source: computed by the authors using Excel.

The results obtained for the Gini coefficient for the indicators analyzed in the article are presented in Table 4. In the year of the health pandemic crisis, 2020 in the case of the unemployed population it was

shown a higher level of inequality due to the value of 0.186 as many people lost their jobs but in the same year, this value decreasing in 2022 showing that the economy of Romania has recovered rather fast. It can also be noted that the growing trend of regional inequalities is maintained even after the removal of social distancing and travel restrictions after the health crisis.

Regarding the financial crisis versus the pandemic one, in the majority of the cases, it was shown that the values of the coefficients in the 2020-2022 were higher than the ones in 2008-2010 and also after the COVID-19 crisis the tendency of increased disparities was maintained. The only domains that were least affected by the pandemic were demography (rural population), transportation infrastructure and economic potential (companies with 10-49 employees).

5. CONCLUSIONS

Through this article we have made an analysis of the main types of regional inequalities, in 2022 and also in comparison with 2020 and 2008 based on the Gini/Struck coefficients method by using the existing statistical data on Tempo-online.

The results obtained after applying the concentration coefficients are the following:

1. The majority of the coefficients had values placed in the interval [0-0.3] on a regional and national level apart of the number of the researchers whose coefficient at national level was both in 2020 and 2022 over 0.5; this showed a relatively uniform distribution, without too much concentration in those areas;

2. There are, however, some sectors that have a high degree of concentration at regional level (coefficients values being over 0.35: population from urban/rural, the SME sector [10-49 and 50-249 employees], total turnover and trade, employment in some sectors [trade], gross investments, active local units from the real estate transactions sector, institutions of higher education, research;

3. The analysis of the evolution of Gini/Struck coefficients showed a clear trend in the increase of the concentration of regional disparities in Romania, after the year 2008 till the COVID-19 pandemic affected Romania's economy. It appears that there is a higher concentration regarding the population, number of employees, employment indicators.

Also, it is clear that the Bucharest-Ilfov region, the most developed region of the country, determines an increase in the concentration of certain areas, thus affecting the results of the entire country. In parallel, we can observe a slight increase, which is concentrated in the regions from the west of the country (North-West, Centre and West) and less in the eastern regions (North-East, South-East, South-Muntenia and South-West Oltenia), although the real growth could be better assessed at the sub-regional level, where are very obvious the signs of economic decoupling of some marginal areas located on the periphery or face specific development problems.

From all the analysis done in this article we can see that Romania in 2008 when the financial crisis just started and even in 2020 with the beginning of the COVID-19 pandemic still has a developing economy. Its analysis of the past situation can offer better perspectives for future perspectives regarding the country's policies and reforms. Through their impact on the quality of life and the collective well-being, the social policies, similar to fine seismographs, record both the quality of reforms and the need for change.

The measures that were taken in both of the crisis are still far from satisfactory. From the beginning, since Romania joined the European Union, the economy was considered as a priority for the new country's model. Although the privatization is over, the resulting economy is still underdeveloped. The signs of an inefficient economy are visible: GDP, the synthetic indicator, places the Romanian economy on the last places of Europe, at a great distance from the European average. The structure of the economy is that of an underdeveloped country with important areas affected by disorganization and poor management. The economic growth is not ensured by innovative areas supported by the research and development sector and services, but the country's economy is based more on trade. The industry has not yet recovered from the program of rapid privatization and from the financial and sanitary crisis, which in many respects has been a waste for Romania. The important industrial points are the result of external investments. The domestic investments are placed below the level of small and medium-sized economies with low efficiency. They offer more poorly qualified work. The agriculture still suffers from excessive

ownership segmentation and the lack of capital. It is now unable to cope with external competition in the agricultural products market. In general, we can characterize the periods of crisis in Romania as being centrally oriented on the economic issues, but with low interest in ensuring the social rights of the individual and his well-being.

In fact, a faster sustainable economic growth with the help of the funds and grants would also help to alleviate other important problems that the country's economy is now facing as a result of the COVID-19 pandemic, for example, rapidly growing budget deficits and the increase in the level of public debt relative to GDP. Romania must make a priority the absorption and efficient use of these funds in all of the regions, in order to support and develop the regional economy.

In 2020, COVID-19 reduced the prosperity gap between rich and emerging countries, between the more developed and less developed regions as the strong economies were hit hard at the start of the pandemic. However, in the medium and long term, its consequences could further affect the emerging markets.

The trend of a continuously decreasing Gini coefficient in the majority of the indicators analyzed as seen in 2022 is due to the fact that after the COVID-19 crisis the Romanian economy started to recover with the help of the policy responses and the funding that was received from the European Union due to the relative focus on those towards the poorer regions who were potentially the most affected by the pandemic.

The analysis that was made in the article proved that the financial crisis had a higher impact upon the territorial inequality than the COVID-19 pandemic. Thus, the values of the Gini and Struck coefficients of were higher in 2020-2022 than the ones in 2008-2010. The tendency of increased disparities that began with the financial crisis were maintained in the pandemic, the only domains that were least affected by the pandemic being demography (rural population), transportation infrastructure and economic potential (companies with 10-49 employees).

The main factors that had an influence over the increase of the territorial inequalities were determined by the political measures that were taken in the period before the crisis and by a series of elements that are part of the endogenous potential of a regions: the capacity of developing projects with a high territorial impact, the degree of research and development, the possibility of the implication in different areas like the infrastructure, health, education. The fact that the cohesion policy of the EU (for example European Regional Development Fund) follows the decrease of the territorial inequalities has led to specific measures and policies to be applied both at national and regional level.

The importance of the study is given by the fact that the stakeholders should keep in mind the evolution of the regional inequalities and create specific and adapted policies in cooperation with the development councils and the authorities of the counties.

The pandemic has generated an increase in income inequality between rich and poor regions because the latter have had in the beginning fewer policies to mitigate the impact of the crisis and, at the same time, limited access to vaccines. In addition, the pandemic has accelerated long-term structural trends that will not be conducive to many emerging economies. In the post-COVID-19 world, the comparative advantages of the relatively cheap workforce - on which the growth of emerging and global markets was primarily based - would count less. In this context, the path to high-income status could become longer and more difficult for these countries.

USE OF AI TOOLS DECLARATION

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

AUTHOR CONTRIBUTIONS

All authors contributed equally to this work. All authors read and approved the final manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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Linking Sustainable Development and Urban Spatial Conflicts in Poland: evidence from Warsaw

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ABSTRACT: The article addresses the perception of the concept of sustainability by the participants of urban conflicts that took place in Warsaw in 2015-2019. In the presented article, the research fields for urban conflicts and sustainable development intersect. The aim is to show how the concept of sustainability influences the expectations, attitudes, behaviour and decisions of participants in urban conflicts and, conversely, the relevance of urban conflicts for the implementation of the concept of sustainable urban development. The article is based on material from 96 IDIs with people (residents, city officials, local activists, researchers and media representatives) who were involved in selected conflicts around the functioning of urban space. The findings relate to the public understanding of the concept of sustainability, its relationship to the motivation to participate in urban conflicts, the role of conflicts in setting development directions and the identification and perception of the role of key stakeholders. I demonstrate that: (1) different understandings of what sustainable development is are one of the causes of urban conflicts; (2) the concept of sustainable development contains an agenda of issues around which the 'right to the city' is crystallised, which manifests itself in behavioural form in, among other things, the formula of participation in urban conflicts. The conclusions of the article can support education for urban sustainability and also urban policies to strengthen dialogue and governance.

KEYWORDS: Sustainable development, urban conflicts, sustainable development stakeholders, Warsaw.

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1. INTRODUCTION

The article aims to show how the concept of sustainability is socially understood and how it influences the expectations, attitudes, behaviour and decisions of participants in urban conflicts and, conversely, the relevance of urban conflicts for the implementation of the concept of sustainable urban development. The main research question refers to the relationship between conflicts and visions of city development. I was looking for answers to the following detailed questions: 1. Is there a common set of stakeholders for urban development and urban conflict? 2. Was there any problem at the centre of the concept of sustainable urban development particularly raised in the studied urban conflicts? 3. How do respondents perceive urban conflicts in the light of the concept of a sustainable city? 4. Do urban conflicts reveal elements of city development policy evaluation? The article is based on the research on urban conflicts that took place in Warsaw in 2015-2019 and their relation with the urban development model visions, with the dominant vision of sustainable urban development.

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The term "sustainable development" has been used repeatedly in the Warsaw development discourse, as in most European capitals (Van Der Zwet & Ferry, 2019), which is a result of, among others, global, European and national policies and frameworks (Fioretti, Pertoldi, Busti & Van Heerden, 2020; Gaffikin, 2019; Ministry of Investment and Economic Development, Poland, 2019; Serbanica & Constantin, 2017). Despite the popularity of the term, the practical implications of SD have been understood differently by the various stakeholders in the city's development. My analysis of the available literature and research has shown that there are few studies directly addressing the public perception of sustainable development by urban development stakeholders in Warsaw. I decided to fill this gap. Specifically, my aim was to find out how the concept of sustainable development is understood by an active and committed group of stakeholders. I found that such a group consists of participants in urban conflicts in Warsaw.

Here a paradox emerged at the outset. In the context of sustainable development, the need for dialogue between different stakeholders is often emphasised, but dialogue in the urban conflict framework is sometimes discredited. In Poland, numerous efforts are being made to encourage residents and other actors in the urban scene to engage in such dialogue in the public participation format (Zubrzycka-Czarnecka, 2022; Czupich, 2018; Słupik, 2016). This approach assumes that sustainability and conflict are in some way contradictory (Terry, Thomas & Skitmore, 2012), and that sustainable development policies should seek to nullify conflict as a threat to harmony and balance. However, contemporary approaches to conflict emphasise its positive effects (Hussein, Hasan & Al-Mamary, 2019). From my perspective, the energy of conflict can be destructive or constructive, depending on how it is harnessed and channeled. It can serve to crystallise and articulate interests, and help to integrate a community around certain values. Participation in conflict allows people to see that they are not alone in their stance, which fosters a sense of empowerment. Conflict can thus foster civic activism and empowerment (Drury & Reicher, 2009). Conflicts are a testing ground for civil society, where it learns public action and develops active attitudes in the public sphere.

While observing the urban reality of Warsaw, my attention was drawn to what I believe is the untapped potential of urban conflicts to support effective implementation of the concept of sustainable development in the spirit of co-governance. This requires at least two factors — knowledge and energy/motivation for action. I see these both elements in urban conflicts. Urban conflicts can be seen as a type of grassroots non-consensual participation. They are not usually considered as a form of participation by the public administration. Participation, however, has more manifestations than "formal participation" which supports decision-making processes of city authorities (Bobbio, 2019) — it relates to co-determination and an active attitude in creating the reality around us, not necessarily in the form of universal consent and political correctness (which I believe is often the case with a purely theoretical approach to sustainable development). Implementation of sustainability postulates in a city is not easy and often requires courage to take certain decisions and to bear their consequences (including the political ones). Broadening the interest in urban conflict analysis within the framework of urban sustainability policies could unfold the process of knowledge articulation (Brunet, 2019), which could lead to a change in the organisation of urban governance processes. This change would involve greater exploitation of the potential for grassroots participation inherent in the act of participating in conflicts.

Already during my initial exploration of the topic, I noticed a number of similarities between sustainability policy and urban conflicts. The first similarity is the material issue — urban conflicts bring together, as if through a lens, different sustainability dilemmas (*whats*). Secondly, they involve similar stakeholders, including residents, local authorities, NGOs, investors, academics and opinion leaders — and thus have a similar personal scope (*whos*). Thirdly, both the concept of sustainability and participation in urban conflicts have a certain emancipatory potential, as they emphasise the need to engage and raise the awareness of different types of stakeholders who have not previously seen themselves as responsible and involved actors in urban development (Wangel, 2011). Stakeholder communities often represent different perspectives and interests, translating into different ways of defining what sustainable development is and what should be prioritised. Thus, it was necessary to conduct in-depth qualitative research on the perception of development visions from the perspective of urban conflict stakeholders.

In this paper, I show the literature review on the relationship between the concept of sustainability and the process of urbanisation, discuss its scope within urban studies, and present three perspectives on the key issue of sustainability. I then present a selection of studies on urban development and conflicts in Warsaw. I discuss the research method, related to the paradigm of qualitative research. The findings are

presented with reference to the research material — quotes from the conducted interviews. I show the public perception and understanding of the concept of sustainability. It is also interesting to link the concept of sustainability to the right to the city (Harvey, 2012), which sanctions participation in urban conflicts. I also highlight the importance of conflicts in determining the direction of urban development and the identification and perception of the role of the main actors, especially the city authorities.

2. LITERATURE REVIEW

2.1. The concept of sustainable development – selected aspects

As the literature on sustainable development is extensive (Mensah & Casadevall, 2019), this section of the article will present the areas that seem to be central to the research problem related to urban conflicts. First of all, the origins of the concept of sustainable development can be found in connection with the process of urbanisation. Cities have been and continue to be the cradle of civilisation, centres of knowledge and innovation, and engines for growth. However, this comes at a price in terms of pressure on limited energy, space and biological resources (Crutzen & Stoermer, 2000). The way today's cities function is the result of the dynamic adaptation of people operating in a given space under conditions of specific social, economic and historical relations. The anthropogenic impact on the planet resulting in the rapid process of urbanisation has specific consequences for the climate, biodiversity, the balance of ecosystems, etc. In relation to the above phenomena, the term "sustainable development" was coined, whose career in public and scientific debate began after the publication of the so-called Brundtland Report in 1987 (United Nations, 1987). The main challenges identified as justifying the need for sustainable development include combating human-induced climate change, protecting endangered species and ecosystems, reducing human pressure on the environment, preventing urban sprawl, moving towards low/zero carbon economy and promoting circular economy.

Many sustainability challenges are concentrated in cities, as are initiatives to accelerate the achievement of sustainability goals — and in the latter context, city authorities are often more determined than national or regional authorities (Wittwer, Hofer & Kaufmann, 2023). To name but a few issues, cities generate demand for energy and resources, but also for innovative solutions to optimise energy and resource consumption, to reduce private car use in favour of public transport, cycling and walking, and to counteract chaotic suburbanisation. Contemporary concepts of sustainable urban development encompass a range of issues, including: sustainable mobility; the design of mixed-use urban functions; the design of compact urban structures; the creation of functional and accessible public spaces; the preservation of historical and cultural heritage; the protection of the environment; the application of modern technologies; and the promotion of high quality of life/livability (Godschalk, 2004; Ogrodnik, 2017).

Moving from the theoretical to the practical dimension of the concept of a sustainable city, it is already clear that the shaping of urban development depends, on the one hand, on the availability of infrastructure and, on the other hand, on the lifestyle of the residents, their preferences and everyday choices. An assessment of the actual success of a sustainable city model should therefore be a function of these two parameters — changes in space — especially in terms of social infrastructure (Grum & Grum Kobal, 2020) and the way it is used. It seems appropriate in this context to define sustainable development as 'a kind of super-order that integrates social, economic, environmental, but also institutional and spatial order'.

Nowadays, the term 'sustainable development' is often seen from the perspective of the 2030 Agenda for Sustainable Development, adopted by the United Nations member states in 2015. It promotes seventeen Sustainable Development Goals. Directly relevant to urban development is Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable), which emphasises safety, stability, sustainability and inclusion, but given the current dynamics of urbanisation processes, it seems more useful to talk about all SDG targets in relation to urban policies — of course with different emphases depending on geographical location and local specificities (Biswas & Mhetr, 2020).

2.2. Three perspectives on sustainable development

For the purposes of this article, I propose to look at sustainable development from the perspective of three ways of determining sustainability.

1. The sustainable development perspective in urban studies suggests that sustainability, in its broadest sense, is the ability of urban systems to survive and remain diverse and productive over time. Cities

can be seen in this context both as separate systems and as part of larger systems (e.g. regional systems) or, ultimately, the global system. Urban sustainability can be defined as the practice of achieving a level of economic and social development that seeks to maintain the equilibrium of the ecosystem and also the balance between the different systems of which a city is composed and in which it is embedded (Slavin, 2011). This perspective is the nexus of urban, regional, national and transnational sustainability policies (Bulkeley & Betsill, 2005). This is the first level of equilibrium.

2. The concept of sustainable development requires that different spheres of human activity (social, economic and ecological) do not develop at the expense of the others. "This is a very difficult condition to fulfil, since practically every human activity causes changes in the natural environment, to a greater or lesser extent. However, it is assumed that if one of the spheres suffers as a result of the undertaken development processes, appropriate compensatory measures must be taken" (Mierzejewska, 2015). In this way, the idea of sustainable development could be understood as a way of managing compensatory measures in order to maintain a balance between different spheres of human activity within the ecosystem.

3. The concept of a sustainable city is often seen in literature as an umbrella construct (Freilich & Popowitz, 2010) that encompasses other model visions of city development, e.g. a green city, a 15-minute city, a resilient city, a compact city, a smart-city. This is interesting because these visions have incompatible and sometimes even opposing priorities, hence including them under one collective term 'sustainable development' seems difficult. At the same time, "a city in a sustainable development perspective is not the sum of private property, interests and resources, but a common good" (Bartłomiejski, 2015), which in itself refers to a situation of possible tensions and the need to seek compromises. In this vein, he proposes to treat the concept of the sustainable city as working out a balance in urban development between different interests and development priorities. This understanding is close to situating the concepts of sustainable development and urban conflict side by side in my research.

2.3. Controversies and contradictions in the concept of sustainable development

The aforementioned broad material scope leads to a certain vagueness of the concept. "Sustainability" as a defining attribute of urban development is currently omnipresent in the discourse and at the same time often treated in an instrumental way. The paradigm of a sustainable city has found its way onto the political agenda. This means that the specific way in which the concept is implemented is influenced by elites (political, economic, cultural/ideological, etc.) and interest groups. The vision of a sustainable city can therefore be seen as both an ideal type and an operational construct linked to the implementation of specific policies.

The evaluation of urban policies in the field of sustainable development is governed by the anthropocentric approach. Its adoption implies a process described as 'anthropocentrism of sustainable development'. It involves prioritising those issues that are relevant to the survival of the homo sapiens species (Pepper, 1998). This paradigm appears to undermine the possibility of maintaining the social, economic and environmental balance I have already mentioned (Campbell, 1996). It also affects the way in which the effectiveness of sustainability policies is assessed. The differences of opinion in this area mean that, although the concept of sustainable development is popular, it is sometimes treated as a trend or a political strategy of certain interest groups.

A number of controversies have developed around the idea of a sustainable city, concerning the basic assumptions underlying the concept. It has been pointed out that there is a discrepancy between different sustainability goals, which in practice often leads to the avoidance of uncomfortable issues and the delay of decisions, e.g. in urban planning (Oseland & Haarstad, 2022). The application of the concept of sustainability in a global perspective is also problematic. The changes proposed by the concept of sustainable urban development are costly in terms of investment. They can only be afforded by societies with a high GDP and standard of living. In this respect, Warsaw, like many European cities, benefits from the support of EU funds. This type of transformation is much more difficult and often faces resistance from local authorities and residents for example in developing countries. This means that sustainable urban development has become 'unsustainable' at a global level.

2.4. Research on spatial conflicts and urban development in Warsaw

Many authors emphasize that the analysis of the functioning of contemporary cities requires reference to the historical background. Warsaw belongs to the group of post-socialist cities, which are characterized by a set of characteristic problems related to urban development, e.g. gated communities and spatial inequalities (Gąsior-Niemiec, Glasze & Pütz, 2009; Sýkora & Bouzarovski, 2012; Gentile, 2015; Marcińczak, Tammaru, Novák, Gentile, Kovács, Temelová, Valatka, Kährik & Szabó, 2015; Ilchenko & Dushkova, 2018; Balčaitė & Krupickaitė, 2018). It is an important analytical reference point for research around urban conflicts and urban development (Golubchikov, 2016; Mihaylov, 2020; Kinossian, 2022).

In the context of research on Warsaw interested in the perspective of urban conflicts and development, despite the multitude of analyses dedicated to these issues, it turned out that they are most often treated as separate, unrelated research issues. The issues of urban development described in the theoretical part were reflected in the research on Warsaw conducted by Dziemianowicz and Szlachta (2019). They argue that compactness and quality of life were the city's development priorities during the period under study. "Various simulations of demographic trends and recent strategic choices prove the 'compact' nature of Warsaw. The city of 1.7 million inhabitants does not intend to increase its population to 3-4 million, despite the availability of free investment areas and a relatively large area (five times larger than the area of Paris). It is clear that a significant increase in the number of inhabitants would translate into a decline in the quality of life unless it was accompanied by investment in social infrastructure" (ibid., p. 15). The authors write about the development of Warsaw in the context of aspirations to become the core of a modern metropolis that guarantees very good living and working conditions. This justifies the emphasis on filling infrastructure deficits that are important for improving the quality of life, accompanied by soft projects that strengthen cooperation networks and support human capital. These aspirations concern the vision of Warsaw as "global", "mobile", "livable", "green and clean".

Many publications raise the issue of barriers and challenges faced by, supposedly, sustainable development of Warsaw. The most frequently mentioned in the literature were:

- the problem of property ownership and reprivatisation (Szlachta, Legutko-Kobus & Jastrzębska, 2017; McNaughton, 2019; Górczyńska, Śleszyński & Niedzielski, 2019; Kuletskaya & Willam, 2023),
- chaos, degradation and spatial inequalities (Jałowiecki, Sekuła, Smętkowski & Tucholska, 2009; Staniszkis, 2012; Celińska-Janowicz, 2014; Jaczewska & Grzegorzczak, 2016; Kusiak, 2017; Smętkowski, Celińska & Wojnar, 2019),
- uncontrolled suburbanization (Degórska, 2008, 2017; Majewska, 2011; Solarek, 2013; Grochowski, Korcelli, Kozubek, Sławiński & Werner, 2013; Powca, Karsznia & Pawłat-Zawrzykraj, 2019; Śleszyński, Nowak, Legutko-Kobus, Hołuj, Lityński, Jadach-Sepioło & Błaszke, 2021).
- demographic challenges (Grochowski, Pieniążek, Wilk & Zegar, 2006; Śleszyński, 2012, 2016).

The mentioned challenges have common ground with Warsaw's "socio-spatial" conflicts, which was reflected in the research conducted by the Institute of Spatial Management and Housing (Siemiński & Bida-Wawryniuk, 2017). The authors distinguished seven types of conflicts: over aesthetics, over the protection of greenery, over noise, over environmental quality, over symbolic space, transport conflicts and others. The greatest intensity of conflicts focused on issues related to urban space and its development. Among the conflicts classified as "spatial conflicts", there were 32 types of conflict situations, the subject of which included: nightclub activities and noise in the city, preservation of buildings from the Polish People's Republic, protection of historical values and cultural heritage, urban monuments and the symbolic value of space, planning and development of space, protection of development and quality of life in connection with the expansion of transport infrastructure, diversification of the needs of users of urban space, protection and availability of urban greenery, property ownership and reprivatization.

In the context of Warsaw and its metropolitan region, research has been conducted on urban conflicts between old and new residents. 30.7% of the inhabitants of the capital city of Warsaw noticed their presence rather sporadically (Mazowiecki Regional Planning Office in Warsaw, 2014). The topic is deepened by research on the creation and functioning of local communities in Warsaw (Dutkiewicz, 2018). They confirm the presence of a social conflict between "indigenous" vs. "new" residents, and they concern, among others, issues of care for common spaces and how to use them. Research indicates that sometimes places aimed at strengthening social development at the local level (CAL/MAL - Local Activity Places) may have conflict-generating potential. The research included, among others: conflicts between micro-communities due to conflicting interests, e.g. regarding the city's transport functions (changes in traffic organisation, conflicts between drivers and cyclists).

Research on urban conflicts in Warsaw from the perspective of local authorities (city officials) has shown that, in their opinion, the most important "inflammatory" topics are infrastructure deficits, related investments, spatial development and environmental protection. A very important area of conflict are deficits in social infrastructure and problems related to ensuring an appropriate number of places in educational institutions. At the level of local authorities, conflicts or activities that could cause a conflict, according to research, often resulted from the division of competences between different levels of local government units and the resulting ambiguities in the scope of duties, competences and powers, as well as different visions of development goals and actions leading to them (Winiarska, Cybulko & Gójska, 2018).

In Warsaw, a system of institutions and procedures for mitigating and resolving urban conflicts was created, based mainly on the functioning of the Social Communication Center of the City Hall of Warsaw, Social Dialogue Commissions, consultation procedures, education and information for residents. Participation in conflicts as a type of social intervention was not (and still is not) recognised in Warsaw as an element of social participation for urban development. It may be in opposition to the objectives of the administration, especially when the administration pursues institutional goals (oriented towards persistence), and therefore the administration wants the social participation it organises to be "painless", "conflict-free" (Siemiński & Tarchalska, 2020). The residents' protests and contestations revealed in conflicts should be considered a relatively poorly researched area of residents' participation in urban affairs — including shaping the city space" (Siemiński & Bida-Wawryniuk, 2017).

The full potential of sustainability-related development path depends, among other things, on the quality of education, the transfer of opportunities offered by education and training systems, the quality of universities and research centres and their cooperation with business partners (Almusaed & Almssad, 2019). We must also remember about life-long learning, which allows older generations to effectively "unlearn and relearn" (Mead, 1953) ways of thinking and acting that are in line with the sustainable development paradigm. In Warsaw, as in the rest of Poland, education for sustainable development is primarily associated with environmental education at school level, which is essentially limited to issues related to nature conservation and threats such as those caused by smog or climate change (United Nations Economic Commission for Europe, 2012). There is no focus on strengthening competences to act for the socio-natural environment in conflict situations where contradictions and different interests are revealed, and without competences, it is difficult to have actual dialogue (Kordasiewicz, Ołdak & Szpor, 2016). A complementary role is played by the activities of NGOs, which both fill the gap in formal education and engage citizens in action on specific issues (Batorczak & Klimska, 2020).

To conclude this part, a literature review on spatial conflicts and urban development in Warsaw revealed that most of the available research shows conflicts from the perspective of their types, strategies and tactics used by stakeholders or the ways of solving them. In turn, the literature on development contains unexpressed assumptions about what sustainable development is, and it seems to be supported by an assumed common perspective on development goals and priorities.

My research aims to broaden the scope of the research field around both categories and highlight the relationship between urban conflicts and the issue of development, and therefore it is exploratory. In my research, I look at urban reality from the perspective of vision, values and the collective act of social participation in the development of the city. This perspective is closer to the qualitative than to the quantitative paradigm, which is manifested in the method of selecting the research sample, in the way of conducting data analysis, as well as in the description of the results and conclusions.

3. RESEARCH METHODS

3.1. Scientific approach

The presented research project at its core is close to the assumptions of participatory action research – PAR (Cornish, Breton & Moreno-Tabarez et al., 2023). Although my research does not fully fit into this trend, I consider two elements of PAR to be particularly important and inspiring: 1. striving to establish a common understanding of the issue (and perhaps above all, noting that there is no single possible understanding of the issue); 2. the need of social science to participate in producing emancipatory social change (which requires strong reflexivity, self-analysis of one's attitudes and opinions regarding the approved vision of development).

In the constructivist spirit, I use the belief in the relative nature of knowledge, thanks to which the statement becomes true that at different times and places, there will be different and often contradictory interpretations of the same phenomena produced by the same person (King & Horrocks, 2012). Thus, the interview situation as such and the researcher's interaction with the interviewee become a tool for shaping knowledge (Morris, 2015). I believe that by including stakeholders of urban conflicts in the research process focused on the study of the development, I create a situation in which it is possible to see one's participation in a conflict situation not from the perspective of an urban rebel threatening the social order, but from the perspective of engaged grassroots participation for development. Changing your perspective helps you see yourself and your reference group in a new light, and places it in a broader social context. This creates an opportunity to strengthen stakeholders' competencies to participate in public debate and strengthen the ability to think critically and argue, which in turn facilitates participation in consensual forms of conflict resolution (Gabauer, 2018).

3.2. Research area

Warsaw, the capital and the largest city of Poland, is situated on the River Vistula. With an estimated population of 1.86 million residents in the metropolitan area and a total of 3.27 million residents, Warsaw ranks as the 7th most populous city in the European Union (GUS, 2022). Spanning 517 km² in city area and 6,100 km² in the metropolitan area across 18 districts, Warsaw functions as an alpha global city, playing a crucial role as a significant cultural, political, and economic centre as well as the governmental seat of Poland and the capital of the Masovian Voivodeship (Dziemianowicz & Szlachta, 2019). Warsaw is responsible for almost 1/5 of Polish GDP (Urząd Miasta Stołecznego Warszawy, 2023).

Warsaw is a city that has experienced waves of profound transformation over the last 100 years. It is possible to draw a timeline of key moments — the modernist development of the interwar period, the 'city of ruins' after the Second World War, the reconstruction of the Old Town, the socialist development with the monumental Palace of Culture and Science and prefabricated housing estates, the period of transformation, gated communities and modern high-rises in the 1990s and early 2000s (Brzostek, 2021), and the current transformation towards a green city and high quality of life. Warsaw's urban fabric, now an eclectic mosaic, has been shaped by all these transformations. For several years now, Warsaw has been following European sustainable city trends. This concept is visible both at the level of strategic documents (Urząd Miasta Stołecznego Warszawy, 2018a), individual urban policies — including, among others, climate change adaptation policy, economic development policy and social diversification policy (Urząd Miasta Stołecznego Warszawy, 2018b), spatial planning (Urząd Miasta Stołecznego Warszawy, 2018c), as well as actually implemented infrastructure projects, especially those supported by European funds and promoting sustainable urban forms (Jabareen, 2006).

3.3. Data collection procedure

This article is based on qualitative research: desk research (literature review, analysis of existing data) and analysis of ninety-six IDIs based on my questionnaire. The sampling was used to present a broad panorama of conflicts that have taken place in Warsaw's public space over the years, as well as their stakeholders, in order to address issues related to different visions of the city's development. The questions were formulated in such a way that the respondents were free to express the vision of the city's development that they approved of, without being directed towards a specific model.

The sampling involved two stages. The first consisted of identifying conflict situations that met three criteria simultaneously:

- took place in Warsaw between 2015 and 2019 (the date of commencement or completion was irrelevant, only the fact that it took place during the period in question);
- took place (to a large extent) in the public space of Warsaw, and resulted in specific acts of collective behaviour: protests, pickets, marches, happenings, as well as acts of vandalism and destruction of property;
- allowed for the presentation of a wide panorama of urban conflicts and their thematic diversity (including land use conflicts (Zou, 2019), concerning the restoration of pre-war monuments, transport infrastructure, new housing, curfew, public art and urban greenery).

In the second stage, I sought out participants in selected conflicts, who were then interviewed. The key criterion in selecting the sample was the respondent's subjective sense of involvement in the conflict. This involvement could have manifested itself in a number of different ways. A whole range of behaviours was possible, including, for example, taking part in protests and pickets, writing appeals to the authorities, taking legal action, openly criticising those with opposing views on a particular issue, initiating actions involving the local community or the media. In the case of several respondents, this 'involvement' was limited to closely following discussions on the Internet and expressing opinions in their social circles. The method used to select the respondents was the snowball or chain method. The aim of this method is "to identify interesting cases through people who know people who know ... which case provides a wealth of information" (Miles & Huberman, 2000). Respondent "zero" was identified during the conflict situation itself, e.g. during a picket, march, happening, or via social media, which helped in finding people associated with a given conflict (e.g. organisers of the mentioned events or people who marked their participation).

The interviews were conducted with people living in the Warsaw metropolitan area, regardless of the length of residence. The sample consisted of 46 men and 35 women. As for the age of the respondents, the youngest at the time of the interview was 20 years old and the oldest was 61 years old. The highest number of respondents was in the 20-30 age group. All respondents were employed and/or studying. The largest groups were students, NGO workers and public administration officials working in the field of urban development.

3.4. Methods of analyses

The specificity of the tool and topic allowed for obtaining interesting, saturated material for analysis. The collected research material from interviews contained a total of over 406,000 words. The material was then coded in terms of research questions using open coding of data. I was particularly interested in statements that directly referred to the categories of "development" and "conflict" simultaneously. I used text analysis tools such as semantic field analysis. This method aims to look for specific meanings in the respondents' statements and "requires (...) an apparent disassembly of the sequence of utterances and the order of statements to put them back together under meaningful readability". Statements coded as referring to sustainable development covered - just like the concept of SD itself - a wide spectrum of environmental social and economic issues.

4. RESULTS

I present the research results concerning the research questions presented in the introduction. They tackle the subjective and objective scope of urban conflicts and urban sustainable development, their perception of conflicts and references to urban development policies.

Although, as mentioned earlier, respondents were free to express their approved vision of urban development without being directed towards a specific model, the vast majority of the conducted interviews referred to the vision of a sustainable city. The term 'sustainable' was often used as a synonym for the word 'appropriate', 'approved'. It was also clear that the term 'sustainable' is very broad and therefore ambiguous. Consequently, the most common combinations were to emphasise different dimensions of sustainability. In terms of the environmental aspect, the sustainable city was combined with the concept of a green city and ecology. When the respondent's main focus was on social issues, a sustainable city was juxtaposed with the concepts of a co-governed, fair and inclusive city.

Respondents identified the main actors in sustainable development as residents, city authorities, economic elites and the NGO sector, which amplifies the voice of residents and acts as a watchdog over city authorities and developers. These are the same groups that have been identified as the main stakeholders in urban conflicts. Residents vs. developers, residents vs. city authorities, and motorists vs. cyclists were most often identified as antagonistic groups representing different needs and interests. The issue that non-human actors are also involved in urban conflicts (Latour, 2007), e.g. laws, procedures or the circulation of information in the form of gossip, also emerged in respondents' statements.

Respondents referred to the concept of sustainability in the context of urban functioning in relation to several key issues: quality of life, urban greenery, strong economy, innovation, accessibility of space, quality of public spaces, social justice, governance, social cohesion and combating chaotic suburbanisation. I

have grouped the issues that emerged within these thematic areas according to the frequency with which they were raised in the interviews, as shown in Table 1.

Analysis of the collected data reveals in the interviews undervaluation of issues related to climate change and ecology in the broadest sense, and a strong focus on the quality of life. According to urban conflict participants in Warsaw, the quality of life and residents' needs should be the priority in sustainable development. In this view, sustainable development is about valuing groups relatively less privileged in their access to power and capital, referred to as 'regular residents' (most of whom derive their income from wage labour or public benefits, have no sources of passive income, and live in owned or possibly rented housing), over entrepreneurs (people with greater access to capital, especially developers and property investors), who are perceived as a privileged group. This is illustrated by the respondents' statements:

"I understand sustainable urban development as one that is more resident-friendly more than business-friendly and all the other functions of the city. The city is first and foremost to live, live and function in, i.e. you need cafes, small shops, service points etc. (...) The city is for the people, that is my opinion" (F, 42).

"At the moment it cannot be said that development is sustainable, because the rights (...) of construction companies or developers are sometimes placed higher than the needs of regular members of local communities, so to speak. Well, and it would be ideal if everyone could have their say on a topic and that the opinions of local residents could contribute to changes in the city's development and infrastructure plans" (M, 52).

Table 1. Typical and atypical issues related to the development of a sustainable city in the statements of the respondents.

Aspects of sustainable urban development	Issues most frequently raised in interviews	Non-standard issues
Quality of life	<ul style="list-style-type: none"> ✓ Priority for the needs of "regular" residents ✓ Quality of life as a benchmark for urban development policy ✓ Different levels of quality of life assessment, including spatial, environmental, economic and social 	<ul style="list-style-type: none"> ✓ The need to balance differing expectations of different groups of residents, ✓ Utopian vision
Urban greenery	<ul style="list-style-type: none"> ✓ Anthropocentrism ✓ Greenery is subservient to quality of life ✓ A sense of scarcity of greenery and the threat of its loss 	<ul style="list-style-type: none"> ✓ The need for action for a change in residents' own awareness about greenery
Strong economy	<ul style="list-style-type: none"> ✓ Revitalisation resulting in gentrification of specific neighbourhoods ✓ Risk of exclusion of economically disadvantaged groups ✓ Threat to cohesion - increasing diversity between neighbourhoods ✓ Hipsters 	<ul style="list-style-type: none"> ✓ The impact of global labour market trends, ✓ Changing occupational structure in cities
Innovation	<ul style="list-style-type: none"> ✓ Linked to other trends, such as the sharing economy or green infrastructure ✓ Improving convenience of the city 	<ul style="list-style-type: none"> ✓ Risks arising from lagging legal and organisational instrumentation in the face of the pace of technological development

Spatial accessibility	<ul style="list-style-type: none"> ✓The need to free the city from car dominance ✓Local availability of services ✓Need to promote public transport ✓Privileging pedestrians and cyclists 	<ul style="list-style-type: none"> ✓The need to combat the stereotype of public transport
Social justice	<ul style="list-style-type: none"> ✓Recognising the needs of "invisible", "uncomfortable" groups ✓Justice interpreted as access to power and capital. ✓Spatial segregation is a material form of injustice 	<ul style="list-style-type: none"> ✓One vision of a fair city does not match the diversity of the population
Governance	<ul style="list-style-type: none"> ✓Participation as part of citizen control ✓The presence of participatory tools and procedures improves the image of city authorities ✓Need to trigger co-governance at the earliest possible stages ✓Key issue of transparency of information 	<ul style="list-style-type: none"> ✓Risk of co-governance by residents who are not competent
Public space	<ul style="list-style-type: none"> ✓Iconic image of Copenhagen as a model example of a sustainable city ✓User experience of the city, including aesthetic impressions. ✓Public space and accessible third places 	<ul style="list-style-type: none"> ✓The need to value places of everyday urban rituals and locality (e.g. markets) instead of impressive investments
Social cohesion	<ul style="list-style-type: none"> ✓Key issue of accessibility of goods and services (spatial, economic, symbolic, etc.) ✓The problem of homophobia ✓Enclosure of space, designation of areas of wealth and poverty 	<ul style="list-style-type: none"> ✓The issue of gender equality
Urban infill development	<ul style="list-style-type: none"> ✓Opposition to chaotic suburbanisation ✓Spatial order ✓Optimal use of existing urban infrastructure. ✓Ventilation channels as an argument against overdevelopment ✓Densification as a threat to quality of life for residents 	<ul style="list-style-type: none"> ✓Multi-purpose housing ✓Mix-use of space

Source: compiled by the authors (2023).

The presence of green spaces in the city is considered in the light of the quality of life of 'regular residents' and the availability of recreational spaces. It is against this background that, from the perspective of sustainable development, the most significant type of urban conflict in Warsaw emerges: the conflict between residents and developers. This is particularly true in the case of new multi-family housing developments, which are often associated with overdevelopment and the elimination of local vacant lots that constituted micro-oases of greenery, or even interference or 'intruding' into recreational areas such as parks, squares and green spaces, as indicated in the statement:

"Developers get these plots of land and build only blocks of flats, without caring about roads, kindergartens, schools (...) more and more of such infill and residential buildings are being put up in parks or on the edge of parks. I wouldn't like this to be a permanent trend, that these parks will simply disappear one day" (F, 39).

Some respondents stressed that sustainability should be considered at different levels, including spatial, environmental, economic, social, symbolic, etc. From a sustainable development perspective, a city is

a complex organism and the different levels of development should not be treated in isolation, as changes in one will automatically affect the others. The predominant view among the respondents was that among the different levels of sustainable development, social issues have priority:

"There is a lot of talk about the idea of sustainable development. It is the kind of development that respects the environment, all those environmental guidelines, as well as the urban vision of a particular part of the city. These are things that we normally think of as sustainable development and this important issue of social sustainability. When we develop a city, we should think about the residents who might be excluded from the area as a result of our activities. The whole process of gentrification means that residents with less money in their pockets are suddenly simply removed from the visible space, the disappearance of local markets is part of that. Or all the issues of chaotic development, of some developer suddenly getting the right to a piece of land and building something on it that is absolutely out of character with the rest of the neighbourhood or the street" (M, 27).

In this sense, the city performs specific functions for different social groups, and their goals do not always coincide. An example of this is the process of gentrification, which is intended to improve the quality of life in the city, but in practice it improves it, but only for a particular group, and excludes some residents. The quoted statement shows how the social structure and the interpretation of social inequalities within it is an important context for interpreting sustainable development.

Participants argued that the idea of a sustainable city should consider the "balance" (in the sense of a harmonious equilibrium) of the needs of different groups of residents, representing different interests, lifestyles, values, etc. There is a reference here to one of the approaches to sustainability that I mentioned earlier when discussing the theoretical aspects of relating the concept of sustainability to the practice of urban development. One respondent described it as follows:

"Sustainable development — balancing the needs of different groups of people. If we are only talking about adapting the city to the needs of cyclists, i.e. increasing the number of cycle paths and getting people to change their habits, then we also need to think about the group of people who have no other way of getting around than by car. We need to have a slightly broader perspective and think about the fact that Warsaw is sprawling. It's getting bigger and bigger, so I can't imagine getting anywhere from these suburbs other than by car, for example, when we're talking about taking children to school. What is needed here is a greater sensitivity to different needs, rather than focusing on catchy, trendy slogans: eco, pedestrians, bicycles. It's not just that way, you have to think about everyone" (F, 23).

Some respondents pointed to the inherent contradictions and dilemmas associated with the concept of sustainability. For example, one respondent noted that the paradox of sustainable development is the unrealistic expectation that different areas of the city will have similar development dynamics and that spatial differences will be bridged:

"It is difficult, in my opinion, to realise such an assumption and it is a bit utopian because it is difficult to achieve. It's impossible to compare; every area of the city can't develop in the same way. Where there are strong lobbies or strong professional groups living in a given area, these sub-districts develop faster and in a much more beneficial way for the residents, there is development of public and sports infrastructure, while in other places it is impossible (...) even the bike sharing system in Warsaw shows that this sustainable development is not 100% there, because new stations are influenced by different pressure groups and how local councillors fight for given issues" (M, 29).

This statement shows that sustainable development can be seen as an axis of political activity in the city, involving structures that go beyond the city government, called urban regimes (Stone, 1993; Sagan, 2000), which can be defined as a set of stakeholders that actually decide the direction of the city.

The results of the conducted research suggest that there is a correlation between referring to the sustainable urban development model and participation in urban conflicts. The reference to the governance model was perceived by the respondents as most closely related to the occurrence of conflicts. The idea was to place residents in the role of a watchdog of city authorities, as well as an indispensable initiator of specific directions of change in development policy.

(...) the activity of residents is a necessary condition for the activity of officials and politicians. There is no reason to delude yourself that a saviour will come and suddenly the city will be man-

aged differently and everything will be wonderful. Such motivation from the residents is necessary: "Hey, we have a problem! What are you doing about it? How are you doing it? We want to know, we're watching you!" (M, 37).

5. DISCUSSION

In this part of the article, I present the main findings from the work with the aim to interpret them in relation to previous research by other authors.

1. The model of urban sustainable development is the most popular point of reference on various issues related to the functioning of the city. It has overtaken all other models in popularity, such as the green city, Smart city, 15-minute city and so on. This is probably due to its umbrella structure, which refers to sustainable development and seems adequate in situations of even very diverse urban conflicts. Due to its wide scope of application, the term sustainable development has been defined differently, as have been its goals. These discrepancies in the interpretation of the concept by different stakeholders may themselves constitute the basis for urban conflicts. In the literature on the subject, the problem of different interpretations of what sustainable development is and what results from it seems to be poorly presented.

2. The same types of actors are present in SD and urban conflicts. Therefore, the initial hypothesis mentioned in the introduction was confirmed. It should be noted, however, that in the case of conflicts the figure of the "developer" was more visible, and in the case of sustainable development the figure of the "non-governmental organisation". Some respondents observed that actors do not function as separate entities, but create structures that meet the premises of urban regimes concerning specific urban issues or specific situations. In the context of issues related to ownership and reprivatisation, the emergence of such regimes (with the implicit role of city authorities and developers) is perceived as a threat to sustainable development. Procedures and information flow, including rumours, play an important role both in conflicts and urban development. They can be analysed as non-human actors and taken into account in analyses in the spirit of action-network theory regarding urban development and urban conflicts. The importance of transparency and equality in the access to knowledge to my interviewees may indicate that data conflicts are clearly seen in opposition to the idea of sustainable development.

4. Most references to sustainable urban development are related to space, which confirms the results of the literature analysis on the subject. The second important point of reference in the context is the quality of life, is the prism through which spatial changes are assessed. The point of reference is the human scale and the perspective of an "ordinary resident". The conducted research shows that sustainable development in the context of quality of life also involves a concern for the quality of space. Architecture should stimulate the senses, satisfy the need for novelty and at the same time meet the expectations of the residents to live in harmony with their environment. The quality of public spaces, urban landscapes, architecture and landscaping play an important role in creating living conditions for current and potential city dwellers. The concept of sustainable development refers to the need to counteract chaotic suburbanisation, but urban infill development activities raise concerns and even a sense of threat. In relation to this issue, a NIMBY (not in my backyard) attitude emerges, according to which certain demands related to sustainability are accepted as long as they do not affect the immediate neighbourhood (Whittemore & BenDor, 2018).

5. The concept of sustainable urban development aims at internal social, spatial and economic cohesion. It promotes revitalisation policies that focus on the needs of disadvantaged neighbourhoods. These activities are based on the assumption that spatial changes lead to deeper social changes. An example of this are the so-called small-scale, grassroots projects, in which local communities themselves carry out activities to improve the quality of their immediate surroundings, often resulting in greater caring, a stronger sense of local identity, greater willingness to cooperate, and increased trust within the local community. In the light of my research, revitalisation in Warsaw as an element of sustainable urban development tends to arouse fears of change and potential exclusion of certain social groups from the use of space (e.g. as a result of rising rents). Particularly in the case of small housing units (such as estates), activities that seek to maintain the status quo rather than change are seen as sustainable development. However, there are characteristic elements of infrastructure that symbolise the kind of urban development that we might call sustainable. These include, for example, new parks and green spaces, places with limited access for cars (e.g. streets turned into pedestrian zones at weekends), cycle paths. In their case,

spatial changes were enthusiastically received by respondents, while maintaining the status quo (no such spatial changes) was seen by respondents as a direction contrary to sustainable development.

6. The conclusions from the desk-research were confirmed: sustainable development is perceived through the prism of a wide range of issues related to urban development, with particular importance on suburbanisation, urban mobility, development of public spaces, quality of life and urban greenery. In the concept of sustainable urban development, the interviewees often included elements related to the natural environment and greenery, which may be related to the priorities of education for sustainable development in Poland (confirmation of conclusions from the literature on the subject). Sustainable development itself, in the light of the conducted research, cannot be seen solely in terms of infrastructure development, but must be perceived through the lens of interrelations — between the different groups and social environments found within the city, and between them and the infrastructure. Respondents often emphasised that sustainable development should not only have a quantitative dimension, but should also refer to soft indicators related to quality of life. Issues close to their personal experience of living in the city were identified as particularly relevant to development. The three most relevant were housing, access to goods and services (including green infrastructure for recreation) and urban mobility.

7. As for the three levels of sustainability that I wrote about earlier, research has shown that the dominant attitude is to perceive sustainable development from the perspective of balance between humans and the ecosystem (in a dual approach). The study focused on seeing the local area in a local perspective, without broader references to national or international regional systems. Alternatively, they referred to benchmark comparisons to specific cities (most often to Copenhagen). This also suggests that urban sustainable development is perceived as an ideal state, and not as a process of achieving it, and it is from this perspective that evaluations are formulated. As I indicated earlier, sustainable development is mentioned in Warsaw in various policy proposals, strategies and documents of a declarative nature. They point to the need for multi-level involvement of various stakeholders — including local authorities, NGOs, scientific institutions, businesses, etc. — in the urban governance process. This refers to the widespread belief that creating sustainable cities is about reconciling and balancing multiple interests. This paper argues that urban conflicts are a grassroots urban laboratory, where sustainability is implemented at the micro level, with all its potential but also its complexity, dilemmas and contradictions.

8. For most respondents, conflict is a natural part of both urban life and the democratic system. According to my research, conflicts can have both positive and negative effects on urban dynamics. Conflicts relate to issues relevant to sustainable development, such as land use, urban green spaces, transport issues, availability of goods and services, quality of life and others. Respondents were in favour of an understanding of sustainable urban development that promotes social dialogue and governance. Based on the research, two main attitudes can be distinguished - 1) valuing disadvantaged groups and 2) balancing the interests of different social groups with different expectations of urban development. According to the respondents, integrated urban development strategies and participatory co-governance can help to effectively realise the potential of cities for sustainable development. In a broad sense, democracy and participation in urban governance were seen by respondents as part of the concept of sustainable development. In this sense, participation in urban conflicts, seen as the assertion of citizens' right to the city, is fully legitimised. However, the implementation of this right in practice requires competence to conduct civil dialogue, which I wrote about in the conclusions from the literature on the subject. Conflicts are beneficial for sustainable development when they serve as a means of dialogue, revealing stakeholder expectations and seeking a solution in which neither party perceives themselves as losers. It is also desirable to treat conflict as an opportunity to broaden the perspective on the city, as long as conflict processes are given analytical attention (Osthorsta, 2021). Conflicts are perceived negatively when there is a clear disparity in the positions of the conflicting parties, when the parties do not have equal access to information, and when the conflict serves only the pursuit of vested economic interests.

9. Sustainable development is about taking responsibility for the long-term direction of the economy, environment and society in ways that reduce the multiple costs of development. It requires education and engagement with diverse groups, including resource management and conflict resolution at the interface between the economy, society and the environment. At the same time, it implies a commitment to social and environmental justice in the broadest sense. These imperatives require a radical revision of values that are specific to urban communities (e.g. the way property rights are understood) and create a huge agenda of economic, social and political issues that need to be re-evaluated, as well as a series of dilemmas

and problems on which there is currently no consensus (Breheny, 1992). Perhaps precisely because of these dilemmas and internal contradictions within the concept itself, some of the arguments for sustainable urban development do not refer to 'hard' arguments, such as climate risks, but to a more 'soft' category, such as the quality of life of residents. In my research, universal access to green infrastructure is particularly important in terms of sustainable quality of life. Gardens, parks, squares, etc. are a special resource in cities that have a positive impact on the use of space. Green spaces in a city affect air quality, provide shade, influence water retention, create space for wildlife, and much more. Large green areas in cities mean a wider range of leisure activities. Protection of species other than *homo sapiens* in cities is not treated as a valid argument for sustainable development.

10. Finally, I would like to draw attention to the deficits in systemic education regarding ESD in Poland. However, it seems that the foundations of this education, which were developed mainly thanks to the active work of non-governmental organisations, are a good starting point and can be supported by new tools and methods. Thus, conflict situations in the city can be seen as a testing ground for civil society and an element of informal action and dialogue for sustainable development, often leading to the broadening of knowledge about the city and the formulation of demands that enter mainstream urban policy (Kron & Lebuhn, 2020). I agree with the respondents that conflicts are valuable for sustainable development as long as they are analysed and become a source of knowledge. In urban policy, therefore, we should strive not only to develop satisfactory solutions to conflicts, but also to evaluate and learn from them. Moreover, the analysis of urban conflicts in the context of sustainable development makes it possible to expand the base of case studies that allow the formation of competences related to the practice of implementing sustainable development. Looking at sustainability from the perspective of conflicting interests and values makes the concept more realistic and, in my opinion, more credible and practical. After all, this is what the concept is ultimately about — not ambitious declarations on paper, but real change (Loorbach, 2020) resulting from confronting and resolving the SD triangle's conflicts (Campbell, 2016).

6. CONCLUSIONS

The article complements the existing literature on urban conflicts and city development and shows that previous research has mainly approached them as issues analyzed separately. Taking into account the perspective of participants in urban conflicts in the research on sustainable development, as well as looking at sustainable development itself through the prism of urban conflicts, opens an interesting field for new analyses and interpretations.

In this article I have shown how the concept of sustainable development influences the expectations, attitudes, behaviour and decisions of participants in urban conflicts in Warsaw. Firstly, it creates an agenda of issues around which urban conflicts are focused. Secondly, it strengthens the sense of subjectivity and agency of the main actors in the urban scene in the spirit of the 'right to the city'. Thirdly, it creates a model for assessing urban reality and formulating expectations. The research shows that conflicts can provide a positive impetus for sustainable development. This is true as long as they can be a source of knowledge and are conducted with relative symmetry between the parties. This symmetry concerns access to information, power, resources, etc. The conducted interviews show that the concept of sustainability corresponds to the concept of the quality of life.

I emphasise the popularity of the sustainable development model while understanding it differently. I argue that both urban conflicts and sustainable development currently feature the same actors and forms of collaboration with the hallmarks of an urban regime. I highlight the importance of data conflict. Space and quality of life are key to linking sustainable development with conflicts in the city, and important issues include urban mobility, suburbanisation, ownership, development of public spaces, and their symbolism. Urban sustainable development is a point of reference more as a state than as a process. ESD, based in the past on environmental education, has a chance, among others, to learn from conflicts, transition to case-based education and strengthen competencies related to participation in public dialogue.

Summarising the conducted research, I would like to point out that to a large extent it focused on the individual-community levels. This aspect, I would suggest, is also worth highlighting in the context of the sustainable development category analysis. Activities for sustainable development in cities involve shared responsibility at both individual and collective levels. The literature and policy statements emphasise that individual choices of different city users have an impact on the possibility of larger scale change. Examples

of this include waste disposal practices or individual choices of urban transport modes. The collective level of promoting sustainable development involves the creation of different types of social norms and institutions (e.g. legal instruments, new ways of goods production and distribution, ways of using urban space). Intergenerational solidarity is also mentioned in this context, in relation to current city users, but also to future generations. Understanding what sustainable urban development means - both at the individual and collective level - should be the subject of further in-depth analysis.

The argument that meeting today's needs should not compromise the ability of future generations to meet the same needs has been present in the urban development discourse for more than three decades. "Intergenerational solidarity (social cohesion between generations), in a general sense, is a system that requires the actions of public life actors aimed at maintaining a positive state of relations between different generations (the needs and interests of people belonging to different generations)" (Czapiewska, 2020). An interesting topic for further research is to examine the intergenerational context of urban conflicts over sustainability. Such analyses can support a better use of the potential of grassroots participation in urban policies for sustainable development, if only by identifying local leaders of change. More practically, they can provide a basis for developing educational tools for sustainable development that are better adapted to the needs of different generations and thus more effective.

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USE OF AI TOOLS DECLARATION

The author declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

CONFLICTS OF INTEREST

The author declares no conflicts of interest.

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Modeling the metamorphosed paradigm sustainable tourism of post-COVID-19. Case study: the Danube Delta Reserve

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ABSTRACT: Within the framework of this paper, we proposed to analyze the evolution of demand for this destination during the restrictions generated by COVID 19, but also the interest of investors in this area. The Danube Delta represented the ideal destination of 2020, in a pandemic context, and continued to represent it in 2021. In this sense, the objectives of the research are represented by the analysis of the main indicators of sustainable tourism development, for which there are statistical data at the territorial level; they are recommended to be the most important for shaping the metamorphosed tourism paradigm. The purpose of the research carried out is to propose some measures/solutions to protect the ecosystem of the Danube Delta Biosphere, so that they can be implemented by the state institutions and even by the inhabitants of the local communities, in order to ensure the sustainability of the Danube Delta tourist destination in the future. The methodology for the analysis of the modeling the metamorphosed paradigm sustainable tourism post-COVID-19 in the Danube Delta was implemented through three successive stages: (1) the analysis of the main theoretical elements regarding sustainable tourism in the Danube Delta, (2) the evaluation of the main indicators proposed for shaping the metamorphosed paradigm of tourism and (3) calculating the average length of stay.

KEYWORDS: sustainable tourism, socio-economic dimension, tourist indicators, Danube Delta, pandemic, restriction, COVID-19

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1. INTRODUCTION

Tourism is analyzed in specialized literature as an activity responsible for promoting the global growth of the economy as a result of its complementarity in interdependence with other economic activities, concretely its contribution to GDP, the creation of new jobs, but also the generation of foreign exchange (Brida et al., 2016; UNWTO, 2020). However, the true significance of tourism, more than the contribution to the growth of the economy of a country, is the ability of economic growth induced by tourism to influence the economic and sociocultural process of a society, having as a positive result the development or improvement of the quality of life of the inhabitants in any state on the Earth (Akinboade & Braimoh, 2010; Cárdenas-García et al., 2015; Cárdenas-García & Alcalá-Ordoñez, 2023).

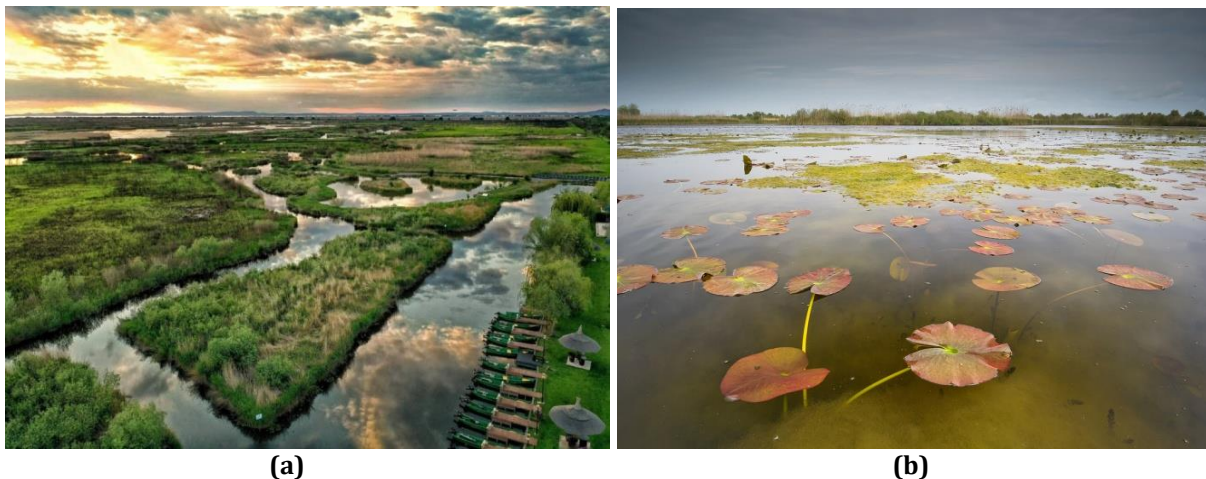
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Territorial-administrative development represents an extremely important, complex aspect that affects the entire economic, social, political and cultural life of a geographical space (Coroş et al., 2021). Among the internal factors with a fundamental role in the organization of future investments in agriculture, within a county, region or tourist area, such as the Danube Delta Biosphere Reserve, are the following: geographical location, available agricultural and human resources, agricultural capacity and structure, the image of the county, region or tourist area at the global level, the level of modernization of agriculture, the level of competitiveness of agricultural products in comparison with other counties or regions and, finally, the sustainable development of tourism, as a basic factor in including the demand for original agricultural products (Gogonea et al., 2017; Ibănescu et al., 2018).

Haven-Tang & Jones, 2012; Privitera & colab. 2018; Sidali et al., 2015 signaled the extremely strong connection between agricultural products, traditional culinary heritage and tourism, directing tourists to participate, during their stays, in local traditional food and beverage supply chains, inadvertently emphasizing their participation in the "heartland tourism experience (village)" and, at the same time, their involvement in the development of sustainable local tourism, in our case, for the Danube Delta Biosphere Reserve.

In 1991, the Danube Delta (Dobrogea Region – Romania), the largest wetland located on the European continent (approximately 6000 km²), famous for its biodiversity (Figure 1a and b), became a UNESCO Biosphere Reserve (Ivan, 2016; Galatchi, 2009; Văidianu, 2013; Găstescu & Toma, 2019); this may represent the most important wildlife area in Europe (Hall, 1993), but also the most spectacular isolated habitat on the European continent (Peptenatu et al., 2022).

The Danube Delta Biosphere Reserve Authority (DDRBA, 2012), promoted tourism as an extremely important form for the sustainable development of villages in the Danube Delta Biosphere Reserve. Sfântu Gheorghe is one of the main villages of the Danube Delta, located on the Sfântu Gheorghe channel, just before the Danube River flows into the Black Sea. According to the authors Mazilu & Nedelcu (2015), the Danube is a very important accelerator of innovation, a connection and communication platform between tourists - culture and civilizations developed through relationships or social, cultural and commercial links well generated by its surroundings.



(a)
(b)
Figure 1. Unique landscapes of biodiversity. **(a)** Wetland in the Danube Delta;
(b) Water lilies in the Danube Delta

Sources: **(a)** www.discoverdobrogea.ro; **(b)** www.dandinu.net

In a study by Stronza (2001), it was noted that there is a gap between the literature addressing tourism and future studies that should address the social, economic and environmental merits of ecotourism and other alternative forms of sustainable tourism.

The tourism sector is presented in specialized studies as having an extremely important contribution to the sustainable development of an area (such as: the Danube Delta Biosphere Reserve), depending on the ways in which tourism resources are valued. For the tourist destination, the Danube Delta, we consider it to be a very important way to increase the well-being of local communities, because it has a varied range of tourist resources - natural and human (Pintilii et al., 2022).

The general objective of this paper is to analyze the relationships that may exist between sustainable development indicators, which will allow us to determine if tourism influences socio-economic development within the Danube Delta Reserve and if there are economic, social and environmental factors related to sustainability that influence these relationships.

The Danube Delta had the status of the safest destination in a pandemic context due to the fact that it withstood the first year of the pandemic better than other destinations, precisely by promoting responsible tourism and health safety conditions, as well as due to the specifics of the Danube Delta, because the delta tourism includes all forms of ecotourism.

Sustainable tourism indicators for outlining the metamorphosed paradigm of the socio-economic dimension focus on several specific elements: the economic benefits of the tourism paradigm for the Danube Delta (the number of tourists arriving and their overnight stays); analysis of the metamorphosed paradigm of tourist accommodation capacity; determining the average length of stay; the analysis of the evolutionary metamorphosis of tourism competitiveness in the Danube Delta, the assessment of the social dimension through (population dynamics).

The purpose of the research carried out is to propose some measures/solutions to protect the ecosystem of the Danube Delta Biosphere, so that they can be implemented by the state institutions and even by the inhabitants of the local communities, in order to ensure the sustainability of the Danube Delta tourist destination in the future.

The methodology for the analysis of the socio-economic and environmental dimension of sustainable tourism in the Danube Delta was implemented through three successive stages: (1) the analysis of the main theoretical elements regarding sustainable tourism in the Danube Delta, (2) the evaluation of the main indicators proposed for shaping the metamorphosed paradigm of tourism and (3) calculating the average length of stay.

This research paper is structured into five sections. Section 1 is an introduction to the analysis of sustainable tourism, detailing the rationale behind this extremely important topic for the post-COVID-19 era. Section 2 is a literature review of research related to the emergence of the contagious virus SARS-CoV-2, and it also describes how this virus (COVID-19) has affected the tourism sector. Section 3 details the sources and techniques used in the research. In section 4, the results and discussions of the research are listed in a systematized way, and also, a correlation of the research topic with the main previous research that was carried out is made. In section 5, the article ends with a conclusion that is a brief presentation of the results, offers recommendations for future research and presents the limitations of the results obtained.

2. LITERATURE REVIEW

Pneumonia of unknown cause, detected in the city of Wuhan, China and first reported to the WHO Country Office on 31 December 2019 (Zhu et al., 2020; Huang et al., 2020). COVID-19 had a devastating impact on the tourism and hospitality industry (Aluculesei et al., 2021; Hsieh et al., 2021; Jung et al., 2021; Savadori et al., 2023; Popa et al., 2023; Desculțu Grigore et al., 2024), but also on other branches of the world economy (Vitková & Štrbíková, 2021), SARS-CoV-2 creating complex socio-political situations in the period 2020-2022 (Popescu & Vâlcea, 2021).

The epidemiological virus COVID-19 was a "super-shock" (Dolnicar & Zare, 2020), which partially blocked sectors of economic activity on the entire surface of the Earth (Drăguleasa et al., 2023). At the beginning of 2020, the controversy of the SARS-CoV-2 pandemic negatively influenced tourism and related activities by stopping flights to tourist destinations, issuing quarantine orders, imposing the wearing of protective masks, alarmingly increasing unemployment and stopping the access of foreign tourists by closing the borders (Doiciar & Crețu, 2021; Kakderi et al., 2021; Tiago et al., 2021; Nemțeanu & Dabija, 2020; Nemțeanu & Dabija, 2021; Popescu & Vâlcea, 2021; Vătămănescu et al., 2021; Nemțeanu et al., 2022; Vinerean et al., 2022; Mazilu & Drăguleasa, 2022; Pripoaie et al., 2022; Băbăț et al., 2023; Drăguleasa & Mazilu, 2022; Mazilu et al., 2023a; Mazilu et al., 2023b; Nemțeanu & Dabija, 2023; Yao et al., 2023; Cehan & Iașu, 2023).

The implementation of the early measures taken by the Romanian government had as its fundamental objective the maintenance of a relatively low rate of infection and mortality throughout the Romanian space (Crețan & Light, 2020).

In the years before the SARS-CoV-2 pandemic, the average growth rate of the global tourism industry was around 4%. At the same time, this constant growth continued in the following years (Ozkaya & Demirhan, 2022). Data from the United Nations World Tourism Organization (UNWTO) show that international tourism grew by 3.8% in 2019, bringing the total number of international travelers to almost 1.5 billion and the amount of money obtained to 1.5 trillion dollars (Marinković & Stevanović, 2021; Teczke et al., 2022). Thus, the World Travel and Tourism Council (WTTC) reported that the tourism industry contributes \$8.9 trillion to the global economy as a whole. Also, according to the World Travel and Tourism Council, 10% of jobs globally are found in the tourism industry, which employs 330 million people (Iwamoto, 2022; Hambira et al., 2022).

The concept of sustainable tourism emerged in the late 1980s and has become firmly established both in tourism policies and strategies (Hall, 2011; Budeanu et al., 2016) and in post-Pandemic COVID-19 tourism research. The concept of sustainable development was enunciated by U.I.C.N. (International Union for Conservation of Nature), thus: "Sustainable development is a process that takes place without producing, depleting resources, ensuring development. Tourist resources must be capitalized at the same rate as their renewal, and abandoning exploitation when the resource regenerates very slowly, in order to replace it with another one, with greater regenerative power" (Mazilu, 2011, p. 18).

The United Nations Environment Program (UNEP) has recognized tourism as an essential component of its sustainable development plan. The International Year of Sustainable Tourism for Development was established in 2017 at an important moment in the development by the global community of the Sustainable Development Goals (SDGs) and the adoption of the 2030 Development Agenda (Polukhina et al., 2024). The Sustainable Development Goals include tourism among other goals. (SDG-8) Promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; (SDG 12) ensuring sustainable patterns of consumption and production; and (SDG 14) conservation and sustainable use of oceans, seas and marine resources for sustainable development (Programme for Sustainable Consumption and Production, 2012).

Sustainable tourism must necessarily be based on the following characteristics: there must be permanent cooperation between state institutions and the private sector of tourism, a rational planning of tourist traffic must be carried out, and last but not least, the local community and state institutions must participate to nature protection actions (Drăguleasa, 2021, p. 153).

Sustainable tourism in the period of the SARS-CoV-2 epidemiological virus required multiple essential ethical and professional changes for all participants in the tourism process, from the tourism industry as the carrier and creator of the tourist offer to tourists as users of innovative tourist services (Stojanović et al., 2024). Among the most important objectives of the sustainable development of post-COVID-19 tourism in the Danube Delta Biosphere Reserve is the provision of positive ecological, economic, sociocultural and institutional changes and benefits for all subjects in the evolution of sustainable tourism.

The local population and visitor arrivals stand out as the most important pillars in shaping the metamorphosed paradigm of post-COVID-19 sustainable tourism for the Danube Delta. In other words, post-COVID-19 sustainable tourism can be considered under the aspect of tourism development in a protected area (in our case the Danube Delta Reserve, Romania), the protection of the natural environment and, at the same time, of the elements of the natural environment is an indispensable activity in the planning process, assessment, development, management and control of sustainable tourism development (Stojanović et al., 2023).

Due to the possession of a diversified natural tourist potential, the development of sustainable tourism in the Danube Delta Reserve can be an integral part of the post-COVID-19 tourist offer, and this tourist potential can significantly influence, first of all, the number of tourist arrivals, the number of tourist overnight stays within tourist reception structures with accommodation function, and secondly, it significantly influences the development of ecotourism, cultural tourism, rural tourism, scientific research tourism, leisure, rest and recreation tourism.

On the other hand, it is extremely important to determine the impact on the local population and tourists, thus, it is necessary to examine the attitudes and behaviors of the population and visitors and measure their level of satisfaction with the issue addressed in this paper, namely, the development of sustainable tourism in a protected area (Cottrell & Cutumisu, 2006; Cottrell et al., 2013; Trišić et al., 2023; Gong et al., 2023). Last but not least, guidelines should be defined for the improvement and development of tourism (Stojanović et al., 2021), the promotion of tourist attractions within the Danube Delta, the exploitation of the natural tourism potential, all of which should follow sustainable tourism and the protection of the environment (the nature).

Applying the qualitative methodology, scientific knowledge has been obtained that there are certain particularities of post-COVID-19 tourism development in protected areas, which must be taken into account for a planning, development and evaluation of sustainable tourism within the Danube Delta Reserve: post-pandemic effects The long-term effects of SARS-CoV-2 on sustainable tourism are difficult to quantify; forms of tourism consist of several activities, which makes it difficult to accurately identify the number of tourists for each form; post-COVID-19 measures to revitalize the destination are still unclear; direct or indirect changes to the tourist destination must not always be harmful to terrestrial or aquatic ecosystems; travel agencies must include in tourist packages anti-Covid-19 activities that can be carried out in protected areas without degrading their development environment. The most important characteristics of the development of sustainable tourism that are determined through a thorough analysis of the scientific literature are the following: protecting natural ecosystems (terrestrial or aquatic) from the Danube Delta Reserve, minimizing waste on the impact of the natural environment, reducing air, water and soil pollution in the reserves inside the Danube Delta, preventing and informing the local community about climate change, promoting in the online environment and on-site an ecological, rational and responsible consumption behavior towards the natural environment as well as employment opportunities in deltaic tourism, by hiring qualified or specialized personnel. These factors are perceived locally and nationally in a variety of other societal, economic, and environmental contexts, including local employment and unemployment rates, business environment, availability of services and infrastructure in popular tourist reserves, accessibility, and adequate transportation infrastructure, as well as environmentally sustainable (Hall, 2019; Almuhrzi & Al-Azri, 2019; Streimikiene et al., 2021). In the current context (post-COVID-19), in tourism, it is important to create the technical-building infrastructure that guarantees tourists the practice of ecological tourism or sustainable tourism for the conservation of natural resources, the sorting of waste and the exhaustive approach to other ethical concerns (Andereck & Nyaupane, 2011; Murava & Korobeinykova, 2016; Luekveerawattana, 2018).

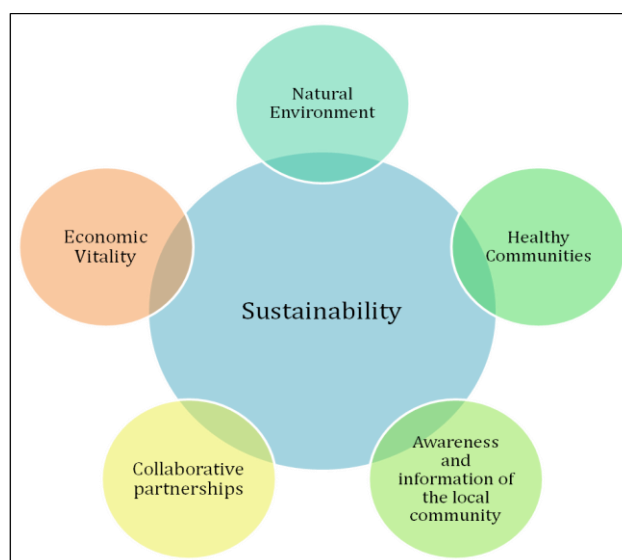


Figure 2. Basic aspects for the development of sustainable tourism in the Danube Delta.
Source: processing and adaptation by the authors after Streimikiene et al., 2021.

Based on a review of the specialized literature on sustainable tourism development post-COVID-19, the most pressing issue for the active factors involved in the tourism process is how to simultaneously

improve economic, social and environmental sustainability, or how to build a successful tourism sector through adopting a comprehensive approach to the social and environmental challenges accompanying the development of post-COVID-19 tourism (Streimikiene et al., 2021; Font et al., 2023; Rodríguez-López et al., 2019). Figure 2 shows the interconnectedness of key factors in the development of sustainable tourism post-COVID-19. This figure not only highlights the main, basic conclusions, but also suggests dimensions (Streimikiene et al., 2021) that need to be considered in future studies of opportunities and barriers for sustainable tourism in the Danube Delta Reserve.

The Danube Delta Biosphere Reserve is home to over 5,500 species of flora and fauna, being considered third in the world in terms of floristic and faunal biodiversity (Pop & Coroş, 2018). In a study by Gómez-Baggethun et al. (2019), they state that "The Danube Delta Biosphere Reserve (DBDD) is a habitat for many endangered and endemic species and a major stopover point for birds migrating between Europe, the Middle East and Africa".

The main attractions for visitors are represented by the natural landscape, spectacular fauna and flora, various protected areas, but also historical-cultural traditions preserved for decades in the deltaic space (the hearth of the rural village). Given that most of the localities in the delta area have the status of rural communities, we can say that rural tourism is practiced, with tourist activities taking place within these areas (that is, in the hearth of the village - the peasants' households). Rural Tourism (RT) "is perfect for travelers looking for authenticity, unique visits and who like to experience local lifestyles" (Niță & Drăguleasa, 2022). The Dobrogean area of Romania stood out to tourists with its remarkable tourist destination - the Danube Delta Biosphere Reserve, an extremely important tourist region for Romania, a place for which the authorities must maintain a balance between socio-economic development, including tourism, surrounding environment and rural communities (Soare, 2021).

3. RESEARCH METHODS

3.1. Study Area

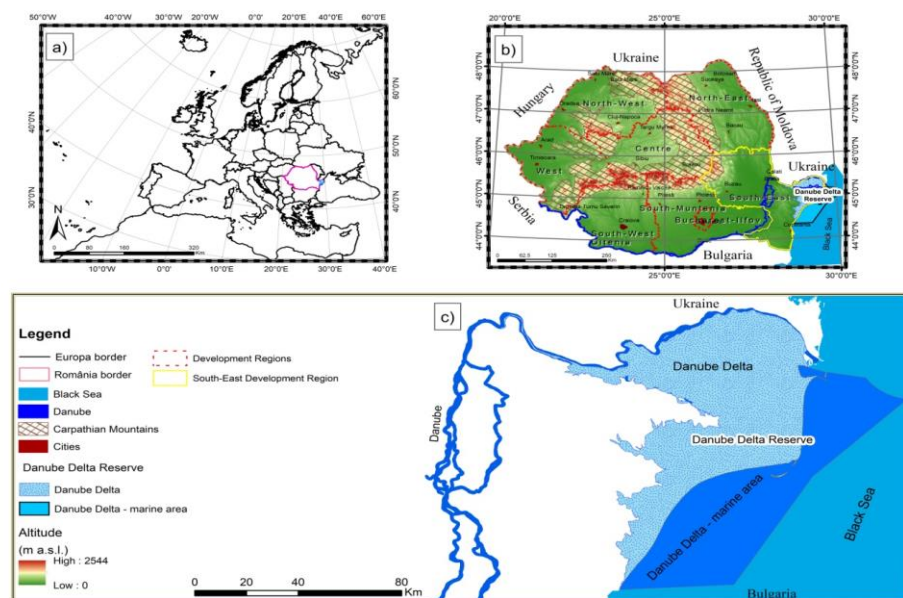


Figure 3. Geographical location of the Danube Delta. (a) the geographical position of the Danube Delta within the continent of Europe; (b) the geographical position of the Danube Delta within Romania; (c) the Danube Delta and the Danube Delta Reserve.

Source: Desculțu Grigore Mihaela Iuliana

The Danube Delta Biosphere Reserve (Figure 3) is made up of three administrative areas (counties): Tulcea (87.73%), Constanța (12.23%) and Galați (0.14%), where 11,576 inhabitants live (2020) (DDBRA, 2020). The Danube Delta Biosphere Reserve represents a special geographical space that needs multiple measures (Diaconu et al., 2022) to develop from a touristic and economic point of view and, at the same

time, to be protected from certain measures which are destructive to the environment for the development of plants and animals - pollution and excessive fishing (Văidianu et al., 2013).

The Danube Delta is a vast area, with an average altitude of only 0.31 m. The highest altitudes can be found on the Chilia ridge (6.5 m), the Letea ridge (13 m), as well as in the Caraorman dune area. The hydrographic network of the Delta is of particular interest from a geographical, economic, as well as tourist point of view. Also, the main nature reserves and monuments in the Danube Delta are: Dealul Bujorului Natural Reserve, Valea Oilor lilac reserve, Letea Forest, Grindul Hill and Răduc Lake, Roșca – Buhaiova, Caraorman Forest, Rotunda Lake, Valea Fagilor Forest, Măcinului Mountains National Park, Niculițel Forest, Nebunul Lake, Popina Island, Sacalin Zătoane Complex, Potcoava Lake, Belciug Lake, Agighiol Geological Reserve, Chituc Hill, Histria Fortress, Lupilor Hill etc.

3.2. Data sources

This research paper uses a mixed methods approach. We use an archival methodology and descriptive statistics (Rotaru et al., 2023; Crețan et al., 2021; Crețan et al., 2023), to present modeling the metamorphosed paradigm sustainable tourism of post-COVID-19 in the Danube Delta. Moreover, a tourism indicator (length of stay) was used to determine if there are specific trends at the level of the Danube Delta.

The archival research method was used to obtain several sets of statistical data from the National Institute of Statistics of Romania. Thus, based on the statistical data, we drew graphs using the descriptive statistical method. These graphs are utilized to present the number of tourist arrivals, the number of overnight stays in tourist accommodation structures, the capacity of tourist accommodation existing and in operation, but also the structure of the population by residence on January 1, 2023. The descriptive statistics, which deal exclusively with features of the data observed by researchers, can be used to summarize population data in data analysis or investigation (Dodge, 2006). A descriptive statistic is a summary statistic that quantitatively describes or summarizes the characteristics of a collection of information (Mann, 1995). Finally, we calculated the tourist stay duration index at the level of the Danube Delta.

The process of analyzing and measuring the sustainability of the tourism sector represents a continuously metamorphosed paradigm and requires constant monitoring (Mitrică et al., 2021) of sustainable tourism indicators and events resulting from the practice of tourism.

The duration of the stay is expressed by the number of days the tourist stays in the destination; represents the ratio between the amount of overnight stays and the number of tourists (Cocean et al., 2005, p. 232) (1):

$$Dms = \frac{\hat{I}}{T} , \quad (1)$$

where: Dms = average duration of the stay; \hat{I} = the amount of overnights; T = the number of tourists.

The average duration of the tourist stay represents one of the most important variables of a tourist's decision-making; this is closely related to the tourist's experience, such as the type of accommodation structure used, the destination chosen, etc. (Salmasi et al., 2012; Alén et al., 2014).

Based on the analysis of specialized literature, we consider the following research hypothesis:

H1: "The sector of economic activity - tourism is directly connected and associated with the development and economic growth of a post-COVID-19 tourist destination, in the present case, that being the Danube Delta Reserve".

A vast literature corpus also supports this research hypothesis. Tourist arrivals also contribute positively to economic growth (Balsalobre-Lorente & Leitão, 2020). Empirical studies by Tang & Tan, 2018; Muhtaseb & Daoud, 2017; Tang & Ozturk, 2017; Roudi et al. (2019) and Mitra, 2019 found a positive effect of tourist arrivals on the economic growth within a tourist destination.

4. RESULTS AND DISCUSSION

4.1. Sustainable tourism indicators for defining the metamorphosed paradigm of the socio-economic dimension

In the specialized literature, more than 150 individual indicators of sustainable development related to the economic, social and environmental factors proposed by Choi & Sirakaya (2006) were studied, as well as 232 indicators covering the economic, social and environmental aspects proposed by the 2030 Agenda for Sustainable Development (United Nations – the 2030 Agenda). Based on frequency statistics, we have identified the most frequently used indicators in recent years in the research on sustainable tourism development (Table 1, Table 2, and Table 3). Thus, we can exclude some individual indicators because the data of these indicators are difficult to collect, or the collected data exhibit major changes in a certain period (Yuedi et al., 2023).

Table 1. Economic aspects of sustainable tourism.

Ref. no.	Aspects of tourism sustainability	Basic issues
1.	Tourist satisfaction	Overall visitor satisfaction
		Demand fidelity
		Overnights in tourist accommodations
		Duration of the tourist stay
2.	Promotion of the product	Marketing activities for sustainable tourism
		Offers and variety of experiences
3.	Control of infrastructure and superstructures	Transport
		Accommodation
		Restaurant
4.	Exploiting the economic benefits of tourism	Employment at destination
		Investments in the sector
		Real estate investments

Source: processing after Yuedi et al., 2023.

Table 2. Social aspects of sustainable tourism.

Ref. no.	Aspects of tourism sustainability	Basic issues
1.	Conservation of tourist resources	Cultural diversity
		Cultural heritage
2.	Quality of local services	Sports Center
		Institute of Education
		Health services
3.	Well-being of the inhabitants	Resident satisfaction
		Population aging
		Life expectancy
4.	Safety at the destination	Criminal activities
		Road accidents

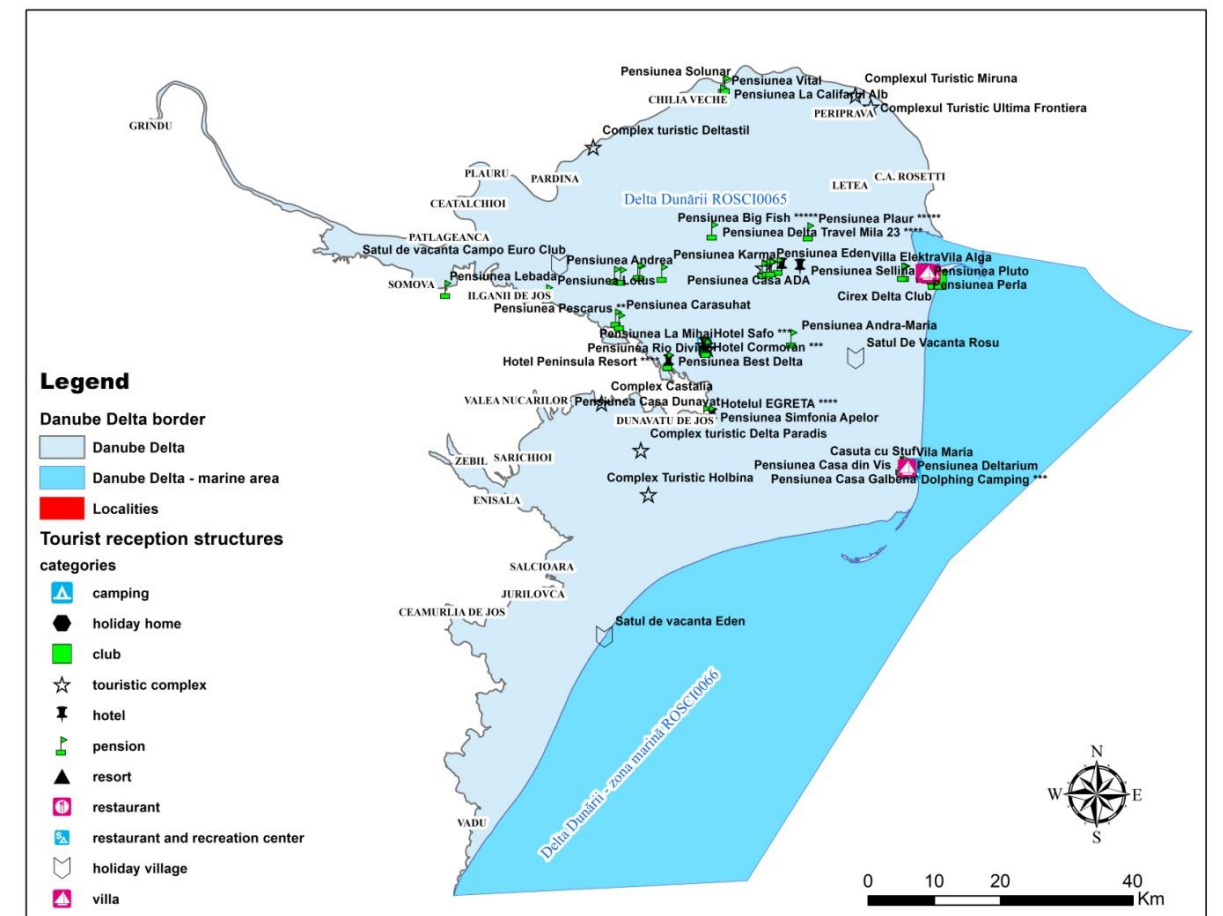
Source: processing after Yuedi et al., 2023.

Table 3. Environmental aspects of sustainable tourism.

Ref. no.	Aspects of tourism sustainability	Basic issues
1.	Natural resource protection	Biological diversity and natural areas
		Seawater quality
2.	Limiting the impact of tourism on the environment	Waste generation and management
		Atmospheric pollution
		The volume of treated wastewater
		Electricity consumption
3.	Environmental awareness and education	The involvement of educational training related to tourism sustainability

Source: processing after Yuedi et al., 2023.

Based on the link between the development of sustainable tourism, specific activities and tourist destination, the Danube Delta capitalizes on the presence of tourist facilities and technical-usefulness characteristics that can facilitate the capitalization, mainly, of the natural tourism potential (Mazilu & Drăguleasa, 2021) - support for the practice of various forms of tourism: recreational tourism, adventure tourism, diving, boating, fishing tourism, rural tourism, but also ecotourism.



Source: Desculțu Grigore Mihaela Iuliana (2024).

Regarding the tourist reception structures that are located on the territory of the Delta (Figure 4), it can be observed that most of them are located in the center of the Danube Delta.

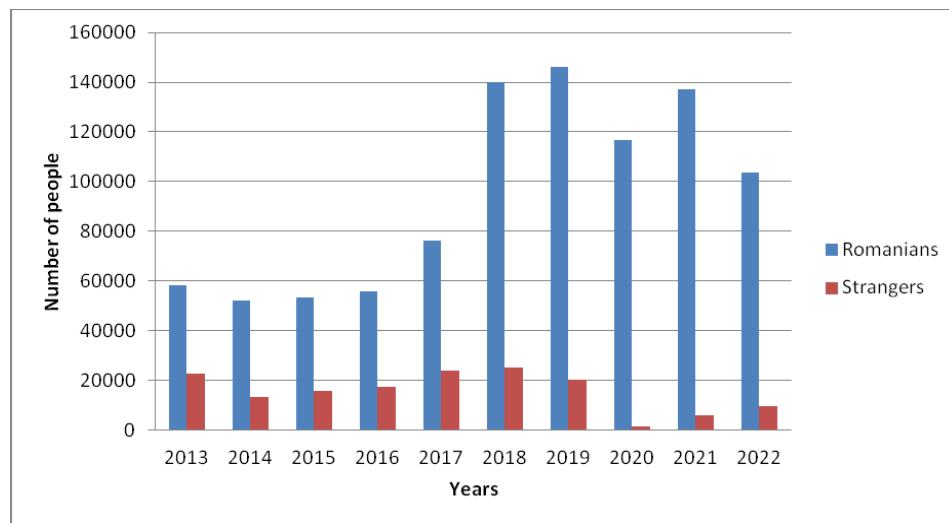


Figure 5. The number of tourist arrivals in the Danube Delta area, including the city of Tulcea.
Source: processing by the authors of INS data, 2023.

For the analyzed period 2013-2022, it is found that in the Danube Delta destination, including the city of Tulcea, arrivals of Romanian tourists predominated (Figure 5).

Regarding the number of overnight stays in tourist accommodation structures in the Danube Delta, including the city of Tulcea, an increase of Romanians was recorded from 2014 to 2019 (Figure 6), followed by a decrease in the period 2020-2022, due to the start of the SARS-CoV-2 epidemic.

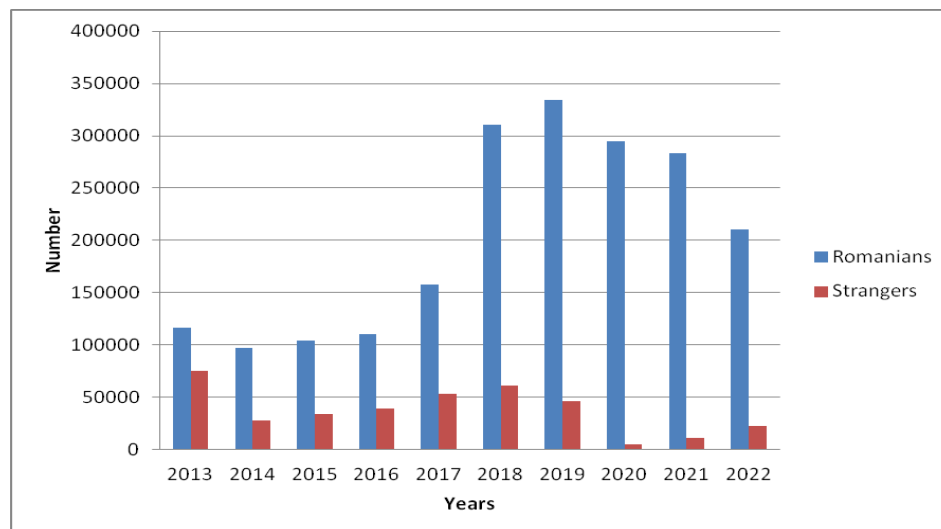


Figure 6. The number of overnight stays in tourist accommodation structures in the Danube Delta area, including the city of Tulcea.
Source: processing by the authors of INS data, 2023.

The existing tourist accommodation capacity (Figure 7), in 2022 the largest increase in accommodation places was observed in the Danube Delta, including the city of Tulcea. This means that the beginning of Covid was not a negative factor in terms of the modernization and increase of accommodation places within the Danube Delta Biosphere Reserve.

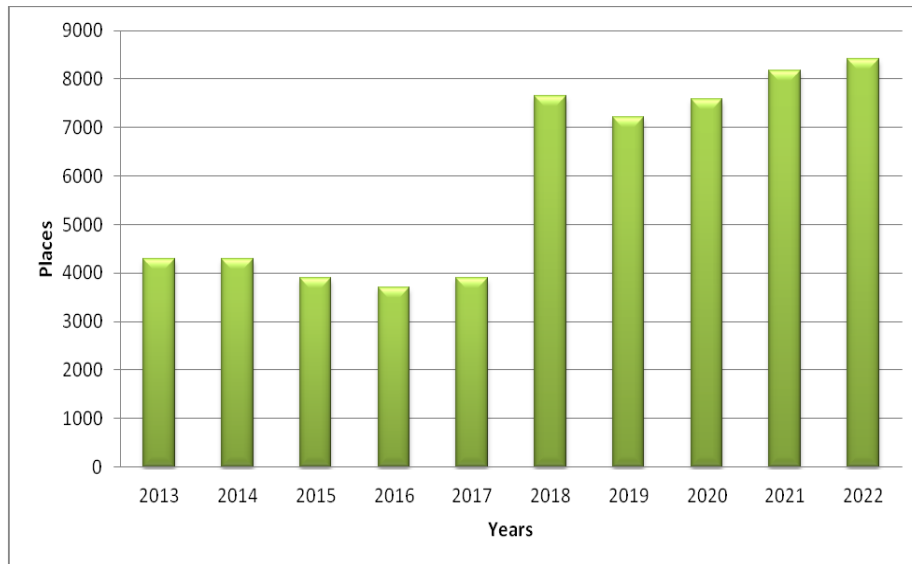


Figure 7. The existing tourist accommodation capacity in the destination called the Danube Delta area, including the city of Tulcea.
Source: authors processing of INS data, 2023.

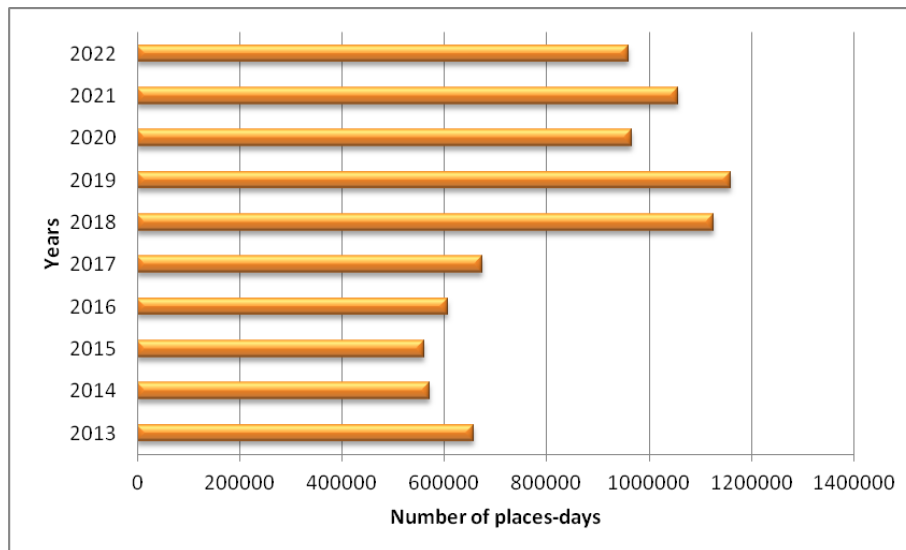


Figure 8. Tourist accommodation capacity in operation in the destination Danube Delta area, including the city of Tulcea.
Source: authors processing of INS data, 2023.

By comparing the tourist accommodation capacity in operation (Figure 8), to the entire existing one, it can be observed that the maximum recorded for the period 2013-2022 was recorded in 2019. At the same time, the beginning of the SARS-CoV-2 virus in 2020 represented a minus in terms of the increase in the number of places-days of tourist accommodation capacity, for the year 2021 and 2022.

For the year 2022, the average length of a stay was 2.05, the number of days the tourist spent in the Danube Delta, including the city of Tulcea.

The low number of tourists who remained within the Delta can be correlated with the Covid period, as from 2022 tourism gradually began to evolve, as compared to 2020, when almost all activities were closed.

4.2. Socio-economic aspects

The SARS-CoV-2 pandemic has proven to be one of the biggest challenges and, at the same time, catastrophe in the history of the traveling and tourism sector in the global economy (Sumanapala & Wolf, 2022). Therefore, the profound impact of the epidemiological virus COVID-19 on the tourism and hospitality sector of the world economy indicates the need to properly address the social, economic and

environmental aspects of the sustainability of a tourist destination (García-Madurga et al., 2021; Seabra & Bhatt, 2022).

According to the opinions of some specialists in the field, it is anticipated that global tourism will regain its position in the post-COVID-19 era, while environmental problems, i.e. climate change, will continue to constrain the development of sustainable tourism (Marome & Shaw, 2021; Bethel et al., 2021). In addition to this problem, the anticipated increase in tourism as a result of the COVID-19 pandemic may lead to higher levels of air and water pollution (Marome & Shaw, 2021) in areas where tourism is practiced, i.e. tourist destinations such as in our case the Danube Delta Reserve. Therefore, the accelerated recovery of tourism in the post-COVID-19 era, if not properly checked, may deliberately lead the tourism industry away from ethical, responsible and sustainable tourism development (Higgins-Desbiolles, 2020).

Tourism industry stakeholders can encompass environmental and social protection by forming alliance strategies, to recover and survive in the post-COVID-19 era in a more resilient and sustainable way (Nguyen et al., 2021). Moreover, a mix of scientific discovery, digital infrastructure and urban planning can enable cities in the Danube Delta to effectively deal with all economic, health and local and regional climate crises. The environmental dimension of the sustainability of a geographical space plays a decisive role in the living conditions of the population and is therefore the key aspect in the connection and collaboration between tourism and socio-economic development (Pulido-Fernández et al., 2013).

The population of the Danube Delta increased from 12,000 inhabitants in 1900 to almost 20,000 in 1966, before decreasing to 12,638 inhabitants by 2011 (INS, 2017). The demographic decline in the area and the aging of the local community is due to the migration of young people to the developed cities, but also to high mortality. Young people migrate because living conditions are difficult, they are isolated, suffer from a lack of employment opportunities and the general infrastructure conditions are bad. Thus, a poorly developed infrastructure for education and medical care results (Boja & Popescu, 2000).

The population density is approximately 5 people/km². Therefore, a third of the population lives in the city of Sulina, and the rest is distributed in 24 rural settlements and more than 14 nationalities coexist peacefully in the Danube Delta (Gâstescu & Ştiucă, 2008).

There are 28 localities in the Danube Delta. The population of these localities experienced fluctuations throughout the period in terms of the evolution of the area's economic importance. Between 1912 and 2011, the number of inhabitants of the Danube Delta decreased by more than 5,000 inhabitants. This phenomenon is given by the decrease of the annual average of 2.5‰ (Damian & Dumitrescu, 2009). The numerical evolution of the population decreased between 1912 and 2011, even during the periods when the population experienced an increase in development (Figure 9).

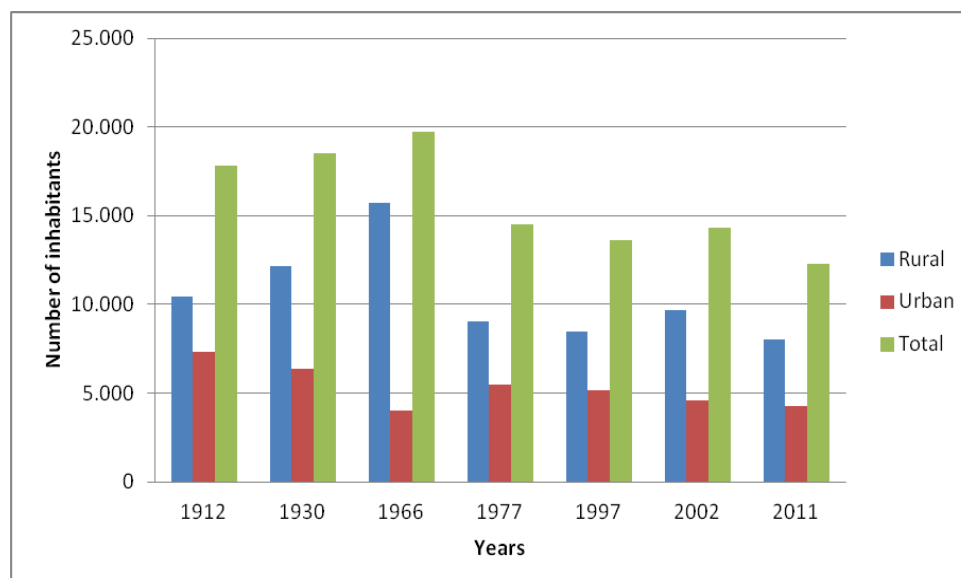


Figure 9. Evolution of the population in the Danube Delta.

Source: data processing based on the Management Plan of the Danube Delta Biosphere Reserve, PMRBDD, (2014).

The Danube Delta exhibits a multitude of plant and animal species that contribute to the formation of a specific biodiversity (Figure 10a, b).



(a)



(b)

Figures 10. Variety of the biodiversity in the Danube Delta. (a) wild horses in the Dranov Lake area; (b) colony of pelicans in the Danube Delta.

Source: (a) Desculțu Grigore Mihaela Iuliana; (b) Szabó József Iosif.

The environmental problems facing the Danube Delta are multiple, such as: reducing the number of fish of valuable species, accelerating the eutrophication of lakes, multiplying algae, destroying or blocking of important areas for the reproduction of species, etc., all these problems modify the entire deltaic

ecosystem. Added to these are the unsustainable exploitation of resources: excessive fishing and grazing, water pollution and unauthorized tourist accommodation and food-related constructions.

5. CONCLUSIONS

The development of sustainable tourism must take into account aspects related to the economic development of local communities, socio-cultural aspects, but also aspects related to the protection of the Delta's natural environment. The successful development of this type of tourism leads to: the protection of the natural, socio-cultural and historical resources of the local communities in the rural area - the hearth of the deltaic and Dobrogean village, the appropriate use of resources for the preservation of the natural environment and the development of businesses that allow the creation of new jobs. Tourist demand for stays in the Danube Delta Biosphere Reserve is most succinctly captured by the dynamics of the number of tourist arrivals for the period 2013-2022.

The competitiveness of the Danube Delta is quite low compared to other tourist areas in Romania, as it is located at a great distance from the spa resorts and seaside resorts. Thus, for the period 2013-2022, the number of tourist reception structures with tourist accommodation functions was increasing from 2019 to 2021, followed by a sharp decrease in 2022, due to Covid-19.

For environmental issues, we bring to the attention of the authorities the following aspects that have a negative impact on the terrestrial and aquatic ecosystems within the Danube Delta Biosphere Reserve: pollution, poor waste management, unauthorized construction, a decrease in the number of fish species, but also increasing amounts of algae.

This research is a starting point for further studies and perspectives. The Danube Delta Reserve must embark on strategic development policies to ensure the sustainable efficiency of the local economy and, at the same time, respect the local environment, culture and traditions. In this context, new (digital) information technologies, as well as European strategies, could support the management of the Danube Delta tourist destination in order to take measures in specific issues, for example: appropriate planning of urban and rural space, of the environment, spatial mobility of the population, smart cities, proper management of biodegradable waste and water as well as energy consumption and most importantly – promotion of the destination, local culture and management of tourist traffic. Moreover, the advances being made in the field of Information Technology effectively and appropriately help to improve the management and promotion of tourist destinations globally, and at the same time, it increases the awareness of tourists towards sustainable tourism that respects the existing local population and resources (Ruggieri & Caló, 2018).

To conclude, like any study, this study is not completely without its limitations. Firstly, the list of indicators could be expanded to include several new ones. Secondly, the research included the most common and general terms of the subject, which may exclude studies that used more specific terms for a nature reserve. The third limitation is that only papers in English were included, but other studies, such as those written in French or German, were not considered.

Speaking about the perspectives of further research on this current and relevant topic, I can think of the possibility of conducting a comparative study with the aim of evaluating tourism agencies and sustainable development within two nature reserves in Romania. The second direction of the research will focus on an interview related to the main motivational directions of the respondents as related to the idea of the benefits of sustainable tourism in the Danube Delta Biosphere Reserve, highlighting their personality, experience, and personal development in connection with the tourist destination. The third future direction of research could involve the application of several GIS techniques in studies of sustainable tourism at the level of a nature reserve.

USE OF AI TOOLS DECLARATION

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

AUTHOR CONTRIBUTIONS

All authors contributed equally to this work. All authors read and approved the final manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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Framing Regional Development: A reflection on the use of language in regional development – examples from Austria

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ABSTRACT: Examining the narrative of rural development, this paper investigates to what extent stories, language or images form consolidated images of a region and how these assist or inhibit regional development internally and externally. Thematically, the discussion incorporates questions of regional development concerning the security of livelihood, discrepancies in living conditions, demographic shifts, outward migration, and condition of infrastructure. The backdrop of this study predominantly consists of case studies in Austrian LEADER regions which were supported through the current structural fund period. The aim was to examine “felt disadvantage” in peripheral rural regions. Upon reflection, this was contextualized to framing. In accordance with (anticipated) regional development the future questions to be answered are to what extent „Deep Frames“ (e.g. “Our situation is bad!”) are doubly counterproductive in regard to both development capacity of a region and also negotiation tools when working with external partners (e.g. fiscal equalization negotiations with state and nation) who are growing to question the subjective interior portrayal more and more.

KEYWORDS: regional development, framing, rural development, linguistic turn, narrative

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1. INTRODUCTION

The connection between language, everyday language or the conscious and unconscious use of language in a regional development context has not been given much attention in either research or practice. Although the linguistic turn successfully found its way into geography and spatial sciences in the late 1960s (see Christmann, 2016; Slasze & Pütz, 2007) it is only in recent years that the possible impacts of language on regional level of action has gained more attention. This concerns both the use of language on communal level from an anthropological point of view as well as the powerful effects of language on regional development as a whole. A further less investigated aspect is that of proactive use of language in regional governance.

2. KEY ISSUES & LITERATURE REVIEW

This is one reason why there has been very little literature on framing and regional development up to this point in time. Initial approaches concerning framing and regional development tend to be found in urban planning and development studies (see Cilliers et al., 2015; Goldstein et al., 2015 or Webb et al., 2018). It was not until the 2020's that framing and regional development were also connected to the

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development of rural or rural peripheral areas. On the one hand, framing or reframing was classified analytically by pointing out the issue of labeling underdeveloped regions as such and thus depriving them of development opportunities. On the other hand, the potential for development in terms of reframing the regions was highlighted (see Guenther & Ledger, 2021; MacKinnon et al., 2022; Roberts & Guenther, 2021).

The EU structural fund policies have given the importance of language a boost since the 1990s. To some extent, this also introduced an investigation of negative connotations in regional development questions. The discussion on the designation of assisted areas in connection to the European structural fund policies is one example. According to this approach a region is “thankful” to be an assisted region, as it implies that it is entitled to monetary contributions and assistance. In exaggeration this means the aim is to be eligible for assistance and not to be self-sufficient and lose access to funding. Regions linguistically positioned themselves as “under-funded” to claim assistance. It is a premise to be below European average. What reaps results monetarily (here again also with regard to fiscal equalization negotiations or specific grants for regions at a state level) also continuously reinforces a questionable image in people’s minds within and outside of the region.

What is linguistic reflection generally about? The scientific paradigm concerns the rejection of the creation of universal truths according to objectivity of science. Simply put, every word can have a different meaning, depending on content, association, emotion, attribution and stories. Concerning deconstruction this means *there is “no truth, just the interpretation of facts”* to loosely quote Nietzsche. It can therefore not be assumed that every person has the same objective understanding of a matter. Language and reality are subject to diverse perspectives. Regional development is in strong relation to regional policy. Actors of regional development as well as those from politics and policy both claim governance – albeit with very different motives. The systematic reflection on impacts of language on regional development has to date only been touched upon. The consequences of the use of language in regional development remains largely un-researched.

Rural exodus, shrinking, brain-drain, vacancy or aging – are all terms which are often and widely used in the undifferentiated and generalized descriptions of rural peripheral areas. These descriptions are given externally via the media but also internally, when mayors use such vocabulary to describe their “rueful existence” in hopes of financial gain and emotional attention from the EU, nation, states, capitals, or the general public. Internally and externally an image is strengthened and negative descriptions are accepted without question. In utter exaggeration: In this manner the province is made into a province.

In Austria 30% of political districts and 40% of the municipalities are categorized as „shrinking regions“. They are portrayed as losers, who do not meet the performance requirements. Many feel alone and abandoned and see themselves as unimportant, weak and powerless. Insult can quickly morph into anger towards those who leave (Hiess & Rosinak, 2018). Do these metaphors of stigmatization hold their own against differentiated views on regions?

Even in regions where depopulation is the prognosis for the future, the discourse should be questioned. Especially so for a country like Austria where on average social security is a given and there are relatively small distances between centres and peripheries when compared internationally. How are images of disadvantage – be it individual or societal – influencing the design and planning of the present and the future? What does this mean for the future associative life, civic society’s local engagement or local infrastructure in all its subsections?

Changing municipalities or regions are especially hard hit. Which historic, economic and socio-cultural contexts define imagination and narrative of regional development and which lines of tradition do they follow? How can a municipality with a history of mining grow into a service-oriented tourist destination? How can municipalities with traditions of external dependence on, for example largescale infrastructure, be led to stronger self-determination? How can municipalities that have followed the Floriani-principle up until now, be given more autonomy without continuously falling victim to deregulation principles?

Questions like these are increasingly the subject of a variety of events¹, process support or concept development and in connection with proactive regional development. Furthermore, factors inhibiting future development need to be critically questioned in order to categorize and retrieve one's own potentials in rural regions.

2.1. Are we in need of a new language?

The Austrian Conference on Spatial Planning (ÖROK)² is currently working on this theme in the implementation of the Austrian spatial development concept (ÖREK). They conclude that language used to describe regions with declining population and the corresponding phenomena are predominantly filled with negative connotations. The constructed public opinion of these regions facilitates a downward spiral. Regional policy and planning need appropriate methodology from outside the usual repertoire. Communication science and psychology can enrich the methodological toolbox (see Dax et al., 2016). In current regional development projects, there is an increasing contemplation on linguistics and wording. This pulls regional development into the framing context.

The question posed is which relations the development of a region is embedded in. According to Goffmann³, *framing* describes the embeddedness of a theme within a specific environment of meaning. Continuing, Goffman says *frames* are fundamental cognitive structures that direct perception and reality. Generally, these frames are not consciously developed. Moreover, they are subconsciously adopted during communication processes. Simplified, frames provide and direct thematic structures towards certain perspectives and information processes. Wehling (2016) adds that framing not only influences the process of language learning but also our perception.

So, what is the meaning of words such as shirking, withdrawal, dismantling, loss or problematic regions in regional development? Repetition of these terms result in so called “deep frames”, pictures or metaphors that reinforce value judgements, regardless of empiric evidence. The consequences are fatal. These “metaphors for demise” lead to regions being internally and externally perceived in accordance with these terms. If a region is associated with emigration, it is often described as a “dying region”, which prescribes a direction of perception. The fact that many people move out of these regions to pursue their education is usually completely disregarded. This view is often absent in society and being able to partake in new opportunities is obscured by this point of view and not valued regionally. Frames thus influence both language diffusion and perception. But who wants to live in a dying region and accompany it palliatively?

2.2. Depopulating regions? Seeking new “framing”

Is rural exodus becoming a rural curse? Regions where depopulation is taking place are for example often said to lack employment opportunities, even if this is inconsistent with the acute lack of skilled labour in these exact regions. This implies the exodus from one's own region just as much as a signal of lacking perspectives for potential incomers. Numerous Austrian regions have shown that the most sought-after workforce for business owners is the local workforce. Regional connectivity and associated loyalty to the employer are a relevant asset for small and medium enterprises. Frequently, workforces are lacking as they moved into greater urban areas or were not well assisted in changing over from local education to local employment. Reversely it is difficult to attract outsiders when negative imagery is associated with certain regions.

¹ Dialog-Workshop: „Regionen mit Bevölkerungsrückgang – Perspektiven für einen Image-Wandel“, Friedersbach 2018, <https://www.zukunftsraumland.at/veranstaltungen/9523> (Accessed: 02.07.2018); ÖREK-Impulstreffen, Wien 2018, <https://www.oerok.gv.at> (Accessed: 02.07.2018); „Gutes Leben auf dem Land? Imagination, Projektion, Planung, Gestaltung“, Halle 2018, <http://www.dorfatlas.uni-halle.de> (Accessed: 02.07.2018); Dialogveranstaltung der ÖREK-Partnerschaft Strategien für Regionen mit Bevölkerungsrückgang „Den Blick um 180° wenden“, Gmünd/Kärnten 2018, <https://www.oerok.gv.at/raum-region/oesterreichisches-raumentwicklungskonzept/oerek-2011/oerek-partnerschaften.html> (Accessed: 18.09.2018)

² <https://www.oerok.gv.at> (Accessed: 30.05.2024)

³ http://luhmann.uni-trier.de/index.php?title=Goffmann:_Framing (Accessed: 04.03.2019)

Depopulating regions are not automatically poor regions with weak economic performance. In Austria some peripheral rural regions (e.g. Upper Styria, Waldviertel, and lower Carinthia) have higher absolute and relative growth of GDP/inh as top urban regions. Comparing regional income levels should also be conducted with a stronger differentiation. Consequently, inward self-image and outward public image in regions with strong economic performance should not be linked to demographic developments (see Hiess 2018).⁴

When speaking about regional identity, the attributes given by people or media of a region gain importance (Baumfeld, 2011). From a regional development perspective, the question derives which story, which narrative a region will tell in future.

The simple question remains: “Which story should school children in region XY learn, keep and pass on?” It is a question that is not insignificant for our own biography. Is it a story of demise, or does it require a differentiated story about origin with physiographical resources and specialized successful crafts or regional pioneers to name but a few examples that would be fitting for local stories.

A story is a type of representation. The attributed narrative is a method to convey circumstances and lessons. From an anthropological perspective and in narrative theory, a narrative describes a statement based on a story that conveys both content and subtext. Its function is to categorize experience.⁵ It is not about inventing something that does not exist. Moreover, it is about shining a light on additional facts. It is about a narrative that from an anthropological point of view assists in categorizing experiences beyond biased imagination. Content, frames and subtext allow differentiated nuances that keep a door of opportunity open and selectively reach out to potential incomers.

3. RESEARCH METHODS. METHODOLOGICAL APPROACH TO EXAMINING DISADVANTAGES

In order to demonstrate “felt” disadvantages, a combination of methodological approaches was applied. Based on the „English Indices of Deprivation“⁶ a disadvantage index was developed in Austria for the first time, which was calculated in reference regions (Pinzgau in Salzburg and Waldviertel in Lower Austria). This approach primarily concerns defining the thematic dimensions and selection of indicators for the best possible representation of the disadvantaged areas, whereby six areas with 24 indicators were identified to form the Multiple Deprivation Index (MDI) for these questions (see Heintel et al., 2017; Springer et al., 2020):

- > Disadvantage in income & housing (e.g. low income, high housing costs, real estate prices);
- > Disadvantage in employment (e.g. youth unemployment, old-age unemployment, commuting distance, labour force participation rate);
- > Disadvantage in health (e.g. density of specialists, density of general practitioners, density of pharmacies);
- > Disadvantage in education (e.g. level of education, early school leavers, NEETs men/women);
- > Disadvantage in social affairs & care (e.g. pensioner households, care recipients, ATM density);
- > Disadvantage in finances (e.g. debt, tax revenue).

Based on the findings, a differentiated picture of the region could be presented. Simply put, where are the strengths (despite a negative self-perception and negative framing) and where are the actual weaknesses, which can now also be confirmed. This type of diagnosis now represents the starting point for further steps of possible targeted intervention in regional systems as is also discussed elsewhere (Hooton, 2022). In a next step, these are formed in a participatory process with regional stakeholders and incorporates multiple feedback loops. The intention of this intervention research (Krainer & Lerchster, 2012) is to understand or reclassify communication and deep frames. Another reframing process can follow. This usually consists of developing new frames and a positive image for the future of the municipality or region developed with a broad participatory foundation.

⁴ <https://www.zukunftsraumland.at/aktuell/247-slides-Hiess> (Accessed: 02.03.2019)

⁵ <https://de.wikipedia.org/wiki/Erz%C3%A4hlung> (Accessed: 13.02.2024)

⁶ <https://www.gov.uk/government/collections/english-indices-of-deprivation> (Accessed: 13.02.2024)

4. CASE STUDY: HEILIGENBLUT AT THE FOOT OF THE GROßGLOCKNER

Heiligenblut is located in the Austrian federal state Carinthia, in a peripheral side valley, surrounded by the national park Hohe Tauern⁷. Heiligenblut is one of 19 municipalities which together form a LEADER region⁸ and can thus profit from regional funding and measures of the European funding instruments. It is part of the destination management organization “Hohe Tauern – die Nationalparkregion in Kärnten” (Figure 1).

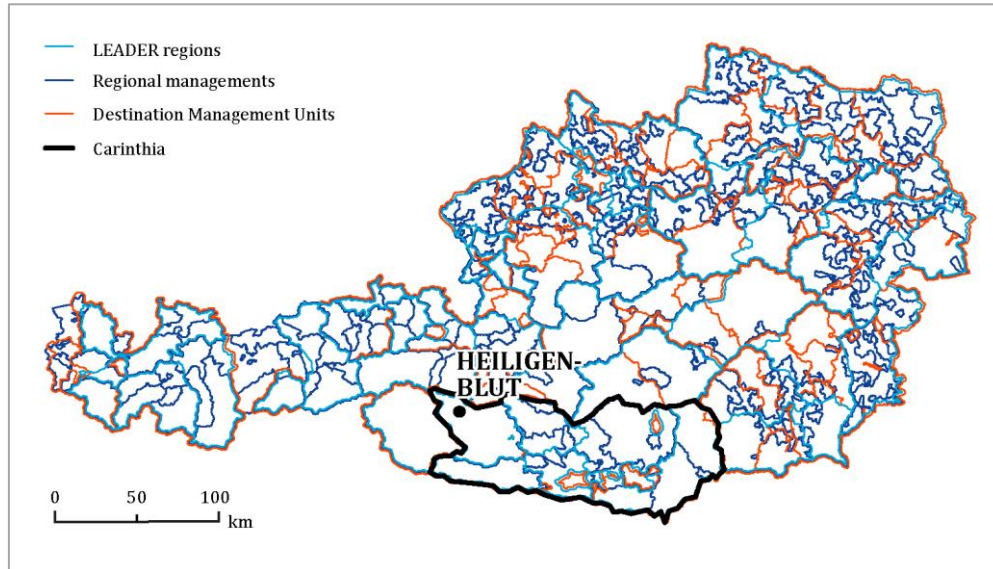


Figure 1. Heiligenblut location, destination management units, and regional development.

Source: Ebenstreit D., 2024; Geodata BEV 2022.

To position this case study, it is vital to understand current demographic and economic developments, which have and continue to influence tourism development in the area. Compared to population developments in Austria and the federal state Carinthia, Heiligenblut is characterized by a drastic and continuous decrease in population (Figure 2).

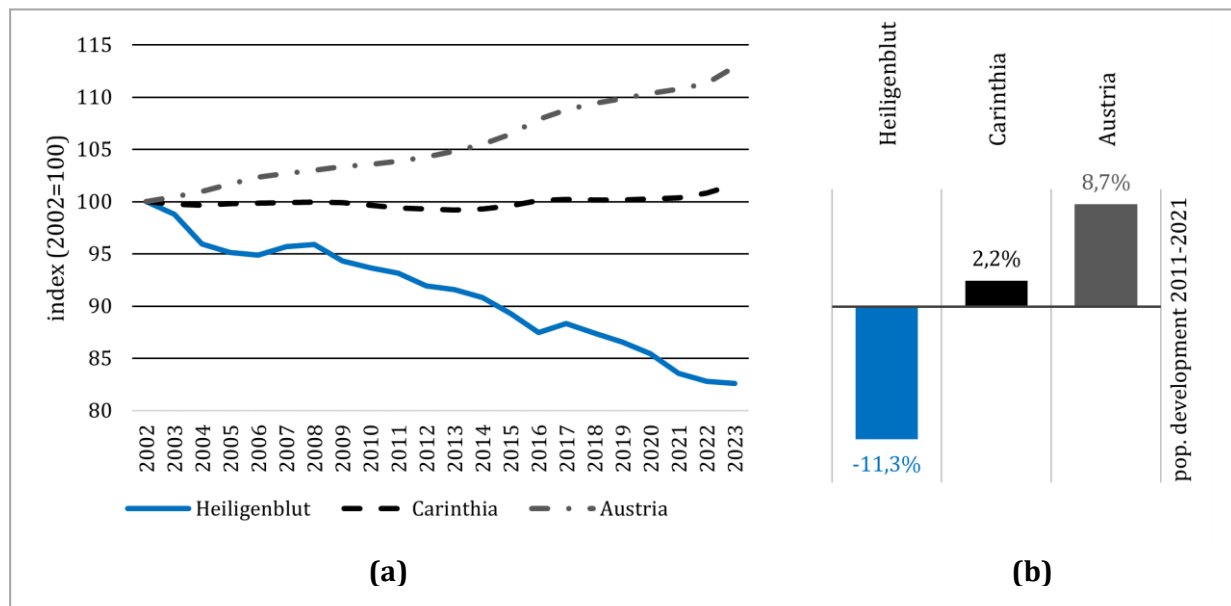


Figure 2. Population development index 2002-2023 (a), and National comparison of population development 2011-2021 (b).

Source: Own illustration, Ebenstreit D., 2024; Statistik Austria 2023a.

⁷ <https://hohetauern.at/en/> (Accessed: 24.04.2024)

⁸ <https://rm-kaernten.at/lag-grossglockner-moelltal-oberdrautal/> (Accessed: 24.04.2024)

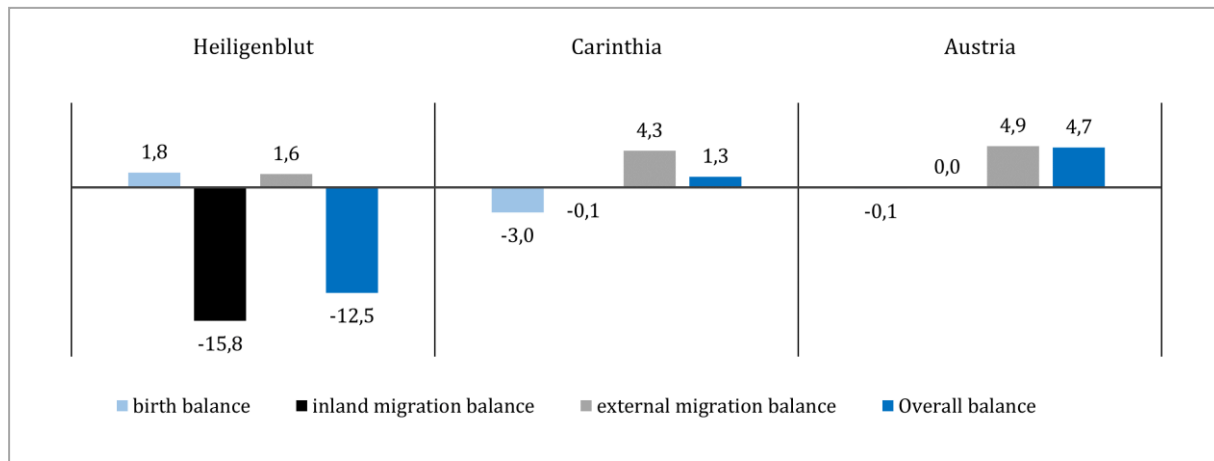


Figure 3. Components of the population balance and overall balance per 1,000 p.e.; average from 2017-2021.

Source: Own illustration, Ebenstreit D., 2024; Statistik Austria 2023b.

The negative population developments are a result of the negative internal migration balance, determined by migration within the rest of the country (see Figure 3). Younger age groups were especially hard hit and decreased greatly between 2011 and 2021. For many economic sectors, such as touristic accommodation and gastronomy, these developments are especially devastating. Losing younger age groups is one of the reasons the employment situation in tourism, in addition to current global issues is extremely precarious in Heiligenblut (see Figure 4).

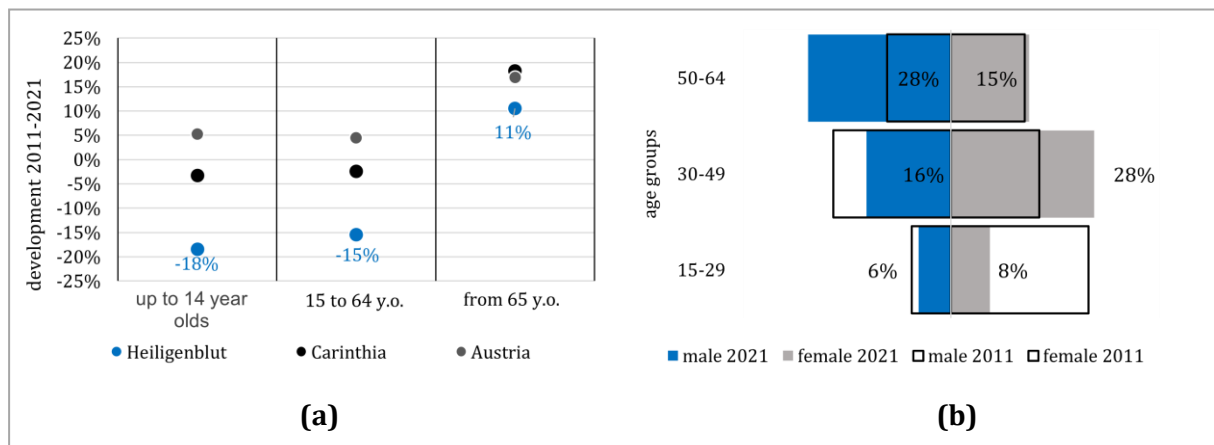


Figure 4. Comparison of the development of age group shares 2011-2021 (a), and Age distribution of employed persons in accommodation and gastronomy 2021 with comparative values from 2011 (b).

Source: Own illustration, Ebenstreit D., 2024; Statistik Austria 2023c.

Furthermore, a shift towards shorter stays is affecting Heiligenblut negatively. This trend is an Austria-wide phenomenon, but Heiligenblut is especially affected due to its peripheral location and poor accessibility. The overnight stays between 2011 and 2022 demonstrate a strong negative development, specially in winter and spring seasons which showed decreases of up to 42% (see Figure 5).

Considering the conditions presented in Figures 1-5, the local stories can be classified. If „stories“ are perceived as historic practice, as in historic anthropology, then this can be applied to the context of regional development. According to this perspective, everyday realities are formed, carried, changed, and destroyed by actors. Questions are directed at concrete “doing”, “making” and “expressing” of events and configurations as well as their perception. The everyday material of human life is alterable and can alter historic processes depending on how it is being framed. This also incorporates interests and emotional

profiles in their practical effect and implementation but also in the medial symbolic-ritualistic prerequisites and mediation. Situational links are formed.⁹

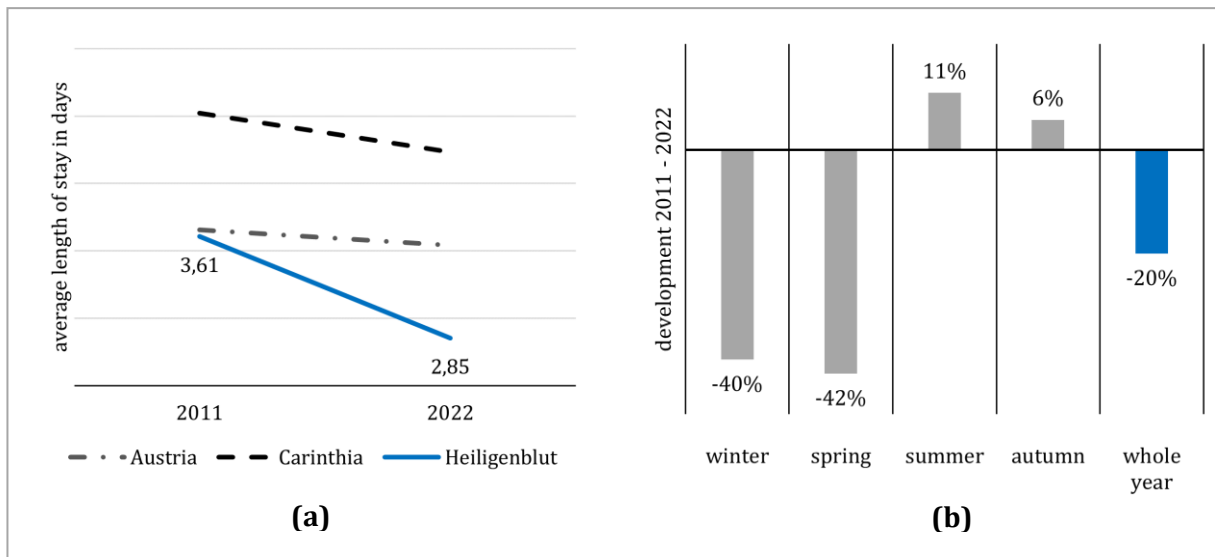


Figure 5. Development of the length of stay in days in the tourism seasons 2011 – 2022 (a) and Development of overnight stays by season between 2011 and 2022 (b).
Source: Own illustration, Ebenstreit D., 2024; Statistik Austria 2023 d.

To gain greater insight we return to the previously posed questions concerning municipalities with traditions of external dependence on largescale infrastructure and external influences and how they can be led to greater self-determination. Starting position and research topic from a historic anthropological perspective are the long-term historic practices of municipalities with very vocal and involved actors.



Figure 6. Heiligenblut town center with Großglockner in background.
Source: Heintel M., 2023.

Heiligenblut¹⁰ am Großglockner (Figure 6) is a peripheral municipality that has been affected by numerous structural changes and as a result has been given a lot of bad press. Quotes such as “Town centres need new life. What to do with the vacant buildings? How does one bring people into town centres? Politicians are looking for answers.”¹¹ Or „At some point the picture-perfect image is a thing of the past: 1.105 residents in Heiligenblut, but currently, only 12 live in the town centre permanently, the

⁹ https://de.wikipedia.org/wiki/Historische_Anthropologie (Accessed: 13.02.2024)

¹⁰ <https://www.heiligenblut.gv.at> (Accessed: 30.05.2024)

¹¹ Kleine Zeitung online (Accessed: 02.06.2024)

others are in the periphery. After hours and when the guests have left, life also leaves the town. At a special event hosted by the state on the future of town centres, mayor Josef Schachner pointed out the issue..."¹² dominated the headlines.

The initial position of Heiligenblut am Großglockner however is not actually that bad – one might assume. The municipality sits at the foot of the highest mountain in Austria (Figure 7), next to the national park Hohe Tauern. It is a pilgrimage site, ski area and starting point of the Großglockner High Alpine Road. It is a fulcrum and hub for a variety of activities for many target groups.



Figure 7. Großglockner, Summit 3 798 m.

Source: Heintel M., 2023.

Analysing the situation from a social anthropology perspective, historic events of heteronomy influence the representative external effects (e.g. through name and politically steered events) as well as media reports and ultimately the ability of self-determination.

The first wave of heteronomy came with the arrival of royalty in the alps, who coming from the city used local mountain farmers and their local knowledge as porters and guides. The royals often immortalized themselves in the naming of famous routes. The names are iron clad for certain routes, such as the Pallavicini Trough on the Großglockner's north side, which to this day and despite climate change and changing ice conditions is still a notorious Ice/Boulder combination tour amongst alpinists. Standing in the spotlight to this day are the royal conquerors and not the local peasantry. The Salmhütte¹³ was the first mountain hut built in the eastern Alps and constructed during the first ascent of the Großglockner. It stands as a royal witness of the historic developments that have occurred since.

The event that changed Heiligenblut the most drastically and permanently was the construction of the Großglockner High Alpine Road under the national socialist's motorization policies for job creation in the 1930s. Roughly 3.200 were employed locally for the construction. The connection to Salzburg caused a sudden jump in tourism and in motorsport activity and quickly changed the idyllic farming image at the end of this side valley in the eastern Alps. The instrumentalization of these products furthered the heteronomy.

Construction of the Magaritzensperre below the Pasterze, the largest glacier of the eastern Alps, in 1953 was a further large scale infrastructure project which required external workers. Additionally, the

¹² http://www.kleinezeitung.at/kaernten/oberkaernten/4159793/Kaernten_Ortszentren-brauchen-neues-Leben (Accessed: 24.09.2018)

¹³ The first hut located at the start of the modern-day ascent to the peak of Großglockner was built in 1799 as part of the first attempt to summit the mountain. Construction was financed by Prince-bishop Franx Xaver von Salm-Reifferscheidt. The structure was the first alpine hut in the Eastern Alps (see Ute Strimmer: Der Berg ruft. Spartanischer Luxus. In: G/Geschichte. No.2/2017, pp. 30-33; p. 32)

water is pumped or directed, regardless of water levels, along 11,6 km of waste diversion tunnels into the reservoir in Mooserboden in the Kapruner Valley (from Carinthia to Salzburg!). It tunnels its way through the watershed of the Alpine divide between the Drau (close to Osijek/Croatia on the Drau) and Salzach/Inn (by Passau at the Danube). This way, precipitation from both sides of the main water and weather divide of the Alps can be collected.¹⁴ The water sources are cut from Heiligenblut and transferred to the other side of the Alps.

Since the 1970s Heiligenblut has been buried under the floods of tourists – at least on nice summer days. The masses are difficult to manage at a local level and can be a great hindrance, even though they contribute to business and income for some. An atmosphere of ambivalence has developed, as the town appears desolate in the morning and evening hours.

The sale of the ski area Großglockner-Heiligenblut to the Schröcksnadel-Group¹⁵ was the most current step towards external dependency. Through the sale the ski area was “kept alive”, thanks to saviours from the “outside”.

During the Covid-19 pandemic the municipality of Heiligenblut was the only Carinthian municipality which was shut off from the outside world during the first lockdown. This decision was made on federal state and municipal level and when word reached the municipality, they found themselves entirely unprepared. In an excerpt from an interview given by the mayor to the Austrian Broadcasting Corporation (ORF): “The decree issued by district governor Klaus Brandner was not agreed upon, nor was there any prior information, said Schachner [note: Mayor of Heiligenblut]. I consider Heiligenblut to be in a state of emergency, because the whole thing came as such a surprise. The quarantine presents us with an almost unsolvable task, tears are flowing in the municipal office.”¹⁶ External dependency, lacking self-determination and image-loss towards the winter sport community and as a tourism destination in the context of the pandemic fit very well into the narratives and discourses of the time.

On January 1st, 2023 the daily newspaper with the highest circulation (the “Kronen Zeitung”), ran the headline: “Heiligenblut in Orban’s shadow – Hungarian oligarch spreads his wings in the Tauern”¹⁷. It turns out that Viktor Orban’s clan now owns two central hotels in Heiligenblut, which are currently empty. Presently, this is the last story revolving around the development of Heiligenblut – very fitting for the overall narrative presented.

A sidenote on this story: The most beautiful part of the ski area, the “Fleisslam” with lifts and tunnel connection to the surrounding Heiligenblut ski area, will close during the 2024/2025 season. Renovation work is needed and pending. It appears that the development of the municipality of Heiligenblut is a never-ending story.

There is a plethora of questions arising from such stories for regional development. On the one hand, they offer explanations of the relation between actions. On the other hand, they offer the opportunity to proactively bring forward participation demands in future.

In regard to section three and the select data and graphs on the thematic context of tourism and regional development the following must be stated: In terms of methodology, Heiligenblut has laid two foundations. On the one hand, it has made empirical data available and processed it – creating an evidence base. On the other hand, Heiligenblut has reflected on their own local development, which has produced the stories of dependency presented. The combination of narratives with empirical data in this approach should be emphasized, as it is rarely applied in regional development to date. The knowledge required to serve as a basis for decision-making concerning further strategies and options for action exists and is available to the community.

¹⁴ https://de.wikipedia.org/wiki/Stausee_Margaritze (Accessed: 25.03.2019)

¹⁵ Anm.: „Die Sitour Management und Vereinigte Bergbahnen halten etliche Skigebiete und Tourismusunternehmen. Einige davon: 80 % an der Großglockner Bergbahnen Touristik GmbH, 50 % an der Großglockner Hotel und Infrastruktur GmbH (GBT Ski-Holding GmbH in Heiligenblut).“

https://de.wikipedia.org/wiki/Peter_Schr%C3%B6cksnadel (Accessed: 13.02.2024)

¹⁶ <https://kaernten.orf.at/stories/3038975/> (Accessed: 13.02.2024)

¹⁷ Kronen Zeitung 01.01.2023, cover & pp. 32-33

Nonetheless, even though this basis exists, the ability of the local council and other stakeholders (such as Hohe Tauern National Park or landowners) to act, appears to be limited. From an analytical point of view, there are several possible explanations for this:

1. Municipal finances: The municipal budget is sufficient to fulfil public tasks, but is generally tight and offers incredibly limited opportunities beyond their basic tasks. For example, purchasing vacant properties in the town center for owner-occupation, interim use or conversion usually fails due to a lack of financial resources, but also due to differing opinions within the municipal council at the time of decisions.

2. Lock-in effect: Despite knowing the historical context of external dependency, it is not possible to escape it. The reasons for this are also complex (see points 3 and 4). It appears that there is no collective decision-making power at municipal level, as the conditions and interest are very heterogeneous and diverge greatly.

3. Stress of suffering theory: Many agricultural and forestry landowners earn a lucrative (additional) income by temporarily renting out their own huts as accommodations. This is still a lucrative business and makes collective commitment to the village center or the community as a whole fade into the background for these landowners. This observation clearly demonstrates the dependency on the outside world. Conversely, the suffering is too low at an individual level to move past personal need and seek action for the collective.

4. Ability of regional stakeholders to act: Due to the heterogeneous interests of the stakeholders involved and the points mentioned above, a collective approach in terms of a joint strategic and future local development cannot to be expected currently. Cooperation within the Hohe Tauern National Park and between the federal states of Carinthia, Tyrol and Salzburg could also be improved.

Nevertheless, at this point the thesis is formulated that an evidence base in combination with the processing of regional histories can provide an excellent basis for action and strategic reorientation of regional development. This is not (yet) the case in Heiligenblut. Elsewhere, such as in neighbouring Pinzgau in Salzburg, this approach seems to have been successful (Heintel et al., 2016).

5. DISCUSSION: REGIONAL DEVELOPMENT NEEDS NEW STORIES

Storytelling is a reflection on the disputes of the past while also being an opportunity to process future development options. Stories are suitable, because optimally they combine emotion, information, entertainment, and tension. They function as information carriers as they subconsciously follow known and learnt patterns. They evoke emotions and form images in the mind.

Stories of the countryside with different connotations continue to top current best seller lists such as Alina Herbig's¹⁸ „Niemand ist bei den Kälbern“ (“Nobody is watching the calves”) or Vea Kaiser's¹⁹ „Blasmusik-Pop“ (“Brassmusic-Pop”). Going back in literature, Peter Rosegger described the changing country quite well 120 years ago. Perhaps some rural regions need to become a bit more urban to improve their communication connectivity abilities into central areas and give due consideration to the growing trend of urbanization of lifestyle in rural regions.

In regional development these stories are precious contributors to content for discussions and create (often controversial) dialogues. They offer a link, continuation and development. This is where the untapped potential lies. Regional development is interdisciplinary and found on different level of action, from public administration to bottom-up processes. The impacts are aimed at multiple scales ranging from EU-target areas to local projects. The quality and length of the process is very diverse and managed through governance-arrangements (see Heintel, 2018). These governance arrangements with joint work across levels of control and in which regional actors play a large role are the communicators of these stories.

The Network for Future Rural Space (Netzwerk Zukunftsraum Land) (LE 2014-2020) seeks discourse with regional businesses to step up to their role as disseminators in communication²⁰. They see framing the discourse of a region as being about a new discourse in which new and positive terms are used in

¹⁸ Herbig, Alina (2018): Niemand ist bei den Kälbern. Zürich-Hamburg: ARCHE (in German)

¹⁹ Kaiser, Vea (2014): Blasmusik-Pop. Köln: KiWi (in German)

²⁰ <https://www.zukunftsraumland.at/download/1479> (Accessed: 17.03.2019). (in German)

communication. Together regional and economic development can provide strengthened imagery such as “crisis region”, “depopulation region”, “backwards” with a new perspective that incorporates prospects. It is the small and medium enterprises that are important for communication as they are often the hub between education, employment, and regional development.

How can a self-image or the image of self or foreign perception be changed? How can we stop “regional complaining”? In each and every case it is important to reflect upon the historic context. How can development in my region be portrayed? Which actors have had an important role to play? Why am I feeling disadvantaged? What am I communicating, and how? It is crucial to think about the deep frames and the conscious use of language. The conscious use of everyday language is especially important. It can also be helpful to contextualize the internal view into empiric evidence to bring stories closer to facts. If this is achieved here and there, new stories with a variety of positive connotation can be told.

Whether the cup is half full (an opportunity) or half empty (a disadvantage) is a very subjective interpretation of a given situation. Concerning intentioned future developments, it is helpful to use language concerning regional conditions in a diversified and assertive approach to address issues in desired regional development.

To quote a mayor in southern Burgenland: „When someone finishes school, we can wave them goodbye.” Such statements obscure the outlook on the real-life scenario and perspectives of the youths as well as any form for proactive municipal developments, especially regarding educational offers for those who are leaving – maybe only temporarily. You can lead a horse to water, but you can’t make it drink. This saying describes the regions’ situation quite well. It is a continuous challenge to be reflected upon.

6. CONCLUSION AND RECOMMENDATIONS

There is great potential in framing and reframing in regional development and in conclusion to the presented research they can be summarized in three steps:

1. Understanding previous developments and the status quo: The basis for this first step is empirical evidence on regional data and indicators that enable the economic, social, demographic etc. situation in the past and currently. The deliberate collection, identification and discussion of common language images can assist in overcoming barriers to development and path dependency (e.g. when starting a reframing or strategy process or at the beginning of a project).

2. Develop a vision: Developing strategies in the context of regional development is a complex task; especially when it comes to bringing the diverse perspectives and backgrounds of the various stakeholders together. The targeted use of linguistic images can help to quickly identify a common thread and then deepen it. The development of narratives in the sense of a normative orientation and governance of a region can have a unifying effect and contribute to a sustainable positive attitude in the region, within the population and among relevant stakeholders. It also strengthens communication in both horizontal and vertical governance of regional development.

3. Communicate the vision, mobilize people and spread a spirit of optimism: Often the development of a region relies on people taking action and acting on the aims of the vision. A well-chosen frame can help make development goals tangible and make an intention relevant when they create an interface with individual value structures. “Translators” (e.g. intermediary service providers) can assist by translating empirical evidence and derived visions into linguistic images that can be heard by a regional population and therefore also tangible and connectable.

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USE OF AI TOOLS DECLARATION

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

AUTHOR CONTRIBUTIONS

All authors contributed equally to this work. All authors read and approved the final manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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The governance of peri-urban green infrastructures in the perspective of sustainable development. A comparison in Europe

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ABSTRACT: The paper analyses the governance models of six peri-urban green infrastructures (GIs) in Europe to reflect on GIs as *critical loci* to operationalize the sometimes naïve and rhetorical aim of sustainable development. In the study, the case of “Corona Verde”, the green belt around the City of Turin (Italy), is compared with other peri-urban GIs to discuss the potential of territorial governance for the construction of objective-led deliberative arenas as promoted by the UN 2030 Agenda for Sustainable Development. As a result, the hypothesis that peri-urban GIs are the most appropriate territorial systems to organise and manage a viable system of sustainability objectives is discussed and reframed. Although limited in scope and data, original traits of this study are the development of a territorial benchmarking comparing governance models rather than territories and the operationalisation of the *governance for sustainability* in terms of a continuous negotiation between the socio-ecological actors of a given territorial system.

KEYWORDS: peri-urban green infrastructure, territorial governance, sustainable development, regional planning, Corona Verde, Turin.

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1. INTRODUCTION

After the adoption of the UN 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change, the international governance for sustainable development shifted from a hierarchical system of sectoral regulatory mechanisms to the agreement on a shared system of objectives and the recurring monitoring of a related set of outcome variables (Jacquet & Jamieson, 2016; Kanie et al., 2019). With the global diffusion of the 17 sustainable development goals (SDGs), the traditional system of rules, controls, and sanctions characterising the international policy discourse on sustainability lost significance in favor of a new “goals and results” approach characterised by (Jacquet & Jamieson, 2016):

- deliberative arenas and open negotiation procedures (Bäckstrand, 2006);
- shared responsibility between the public and the private actors (Abbott, 2012);
- follow-up, review, and institutional learning processes (Steele, 2011);
- informal procedures of “good reputation” and “naming and shaming” mechanisms.

From the United Nations (UN) perspective, the “goals and results” approach promoted with the SDGs is more efficient because it enables a more extensive mobilisation towards sustainability, open to all sectors of society at every territorial scale. Also, this new approach aims to increase the coherence among the actions proposed in the name of sustainability (Kanie et al., 2019; Nilsson et al., 2016).

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Recently, the 2023 UN High-level Political Forum (HLPF) on sustainable development reaffirmed the statements already expressed by the 2019 SDG Summit of New York (24 - 25 September, 2019) asking for (https://sustainabledevelopment.un.org/content/documents/25200SDG_Summary.pdf):

- global action to secure the leadership, the solutions, and the resources to support the transition toward sustainability;
- local action to embed this transition (which is green and digital, but also institutional) in the policies, the budgets, and the planning and regulatory frameworks of the different countries or governments;
- people action pushed by stakeholders, activists, and members of civil society to create grass-rooted movements pushing for change.

The local level, in particular, emerges as the *critical locus* of pro-sustainability actions because the SDGs are relevant to local jurisdictions, and the change they produce is more tangible at small scales (Annan-Aggrey et al., 2022). “Local and regional governments (LRGs) lead territories and local communities’ development paths; they deliver essential public services and act as catalysts for transformative change” (UN-Habitat, 2024). They are tiers of governance closest to local communities, better understanding their needs and priorities and addressing policymaking. At the same time, however, the local scale might be too small when addressing the sustainability of the natural ecosystems (Dente, 2004; Dematteis, 2018). Moreover, actions for the sustainability of the global environment must combine local visions with a shared agenda of goals and results and a common strategy to be effective (UN-Habitat, 2024).

National and regional governments adhering to the UN 2030 Agenda are thus pushed to translate the 17 SDGs into a set of objectives supported by the local communities (Slack, 2014). From a theoretical point of view, this approach implies that sustainable development as a universal target does not exist. Instead, it is the localized outcome of a process of continuous negotiation among views, needs, priorities, solutions, and trade-offs (Krueger & Agyeman, 2005; MacGillivray & Franklin, 2015).

Consistent with these premises, for the effectiveness of the UN agenda, it is essential to:

- territorialise the UN SDGs properly, i.e., translate the global agenda into a system of local agendas, reflecting the local community’s assets and aspirations for sustainability.
- experiment with innovative solutions of territorial governance to construct community-based views on sustainable development in a participated and dialectic way.

However, the UN agenda does not explain how to select and prioritize among the SDGs. According to Bosselmann et al. (2008), territorial governance can turn the abstract - sometimes naïve and rhetorical - concept of sustainability into a concrete and practical issue. Also, it can combine into a coherent framework of action the “hard” regulatory decisions for the protection of the natural environment (water, soil, biodiversity, climate) and the “soft” negotiation of diverging development issues expressed by the stakeholders (Houghton & Allmendinger, 2008).

A central question is identifying the proper *critical locus* (Annan-Aggrey et al., 2022) to operationalise sustainable development in a coherent and viable system of objectives and results. To the best of our knowledge, although the literature that deals with the territorialisation of the SDGs is vast, the very nature of the territorial system where to implement the governance solutions that fed the sustainability of the development should be more well-developed. According to UN-Habitat, “SDG localization is transforming the SDGs into reality at the local level, in coherence with national frameworks and communities’ priorities. Localization means collaboration among all stakeholders and coordination across sectors and spheres of governance. It is a two-way process where the local meets the national and the global, and vice-versa” (2024). Coherently, the UN-Habitat develops a partnership-based approach that helps local governments translate the objective of sustainable development into a practical system of goals and variables throughout all stages of planning, policymaking, project development, and monitoring. Critical components of this extensive approach are multilevel governance, multi-stakeholder collaboration, development effectiveness, and the principle of leaving no one and no place behind. However, UN-Habitat focuses only on urban places.

In contrast, sustainable development should balance urban and rural issues by mixing socio-economic and environmental perspectives. Assuming that sustainable development can only exist in the form of a territorialised agenda and a multilevel negotiation process, identifying the territorial borders of this

governance system, the *locus* where to plan and implement pro-sustainability actions assumes a dramatic role. However, to our knowledge, few studies have been devoted to identifying the proper geographical scale and extension, the borders, and the constituent territorial features of this *locus*. The paper aims to fill this gap, hypothesising that the territorial systems involved in the governance of the peri-urban green infrastructures (GIs) are the most appropriate systems to organise a coherent and viable system of sustainability objectives. As we will discuss, they assume the form of a socio-ecological locus wide enough to include all the stakeholders, assets, processes, and relationships relevant to constructing a place-based agenda for sustainability.

The structure of the article is as follows. Section 2 reports on the technical and scientific debate on the management of peri-urban green areas, identifying in the green belt model the antecedent of current GI discourse. Section 3 discusses the main opportunities and challenges in the governance of peri-urban GIs. Section 4 illustrates the data and method assumed in the paper to develop a comparative analysis of peri-urban GIs in Europe. Section 5 presents the results of the benchmarking developed on the case studies of: Corona Verde and Parco Agricolo del Sud di Milano in Italy; ReihnMain Regionalpark and Grüner Ring in Germany; Regionalpark DreiAnger in Austria; and Parques e Palacios de Sintra-World Heritage Unesco in Portugal.

2. THE PLANNING AND THE GOVERNANCE OF THE PERI-URBAN GREEN SPACE: FROM THE GREEN BELTS TO THE GREEN INFRASTRUCTURES

In the technical and scientific debate that initially focussed on the management of the green areas bordering the cities, we can identify two distinct planning strategies: the “season” of the peripheral *public housing* suburbs and the “season” of the peri-urban greenbelts. The former approach interprets the peri-urban green space as a “virgin” territory apt to satisfy the needs of the expanding urban housing market. The latter approach interprets it as a vital space needing protection and safeguarding of the quality of its natural ecosystems and landscapes. Thus, it considers the planning of peri-urban green areas as a critical public policy tool to contain urban sprawl (Senes et al., 2016). In the 1990s, these visions were substituted by a different approach influenced by the novel concept of the peri-urban green infrastructure.

Greenbelt policies first appeared in the United Kingdom in the 1930s, inspired by Ebenezer Howard’s proposal for a land management policy addressed explicitly to the fringe area separating the town from the countryside. Her priority was to contain the rapid processes of urbanization that characterised the urban centres of the time and to safeguard the natural landscapes, habitats, and rural activities localised in the urban hinterland (Amati, 2016; Sturzaker & Mell, 2017). Between the 1930s and the 1960s, greenbelts became essential components of the international planning language diffused in Russia (Moscow), France (Paris), Italy (Rome), Holland (Randstad Holland), Germany (Berlin, Frankfurt), and Austria (Vienna) (Amati, 2016). In the 1990s, greenbelt policies for the planning and managing of peri-urban green areas were applied worldwide and in the United States planners introduced the term green infrastructure (GI) to stress their new “holistic” approach, combining environmental protection, loisir and economic growth (Grădinaru & Hersperger 2019). The large-scale protected areas, public natural parks, and gardens surrounding the urban core were no longer intended as bulwarks against the urban sprawl but essential assets for the urban and regional economy. Some experts describe this shift as the starting point of a novel generation of policies, characterised by a diversified system of aims and solutions (Thomas & Littlewood, 2010; Breiling & Ruland, 2016). Concerning the geographical scale of intervention, the authorities promoting this new type of greenbelts are urban and regional; concerning the tools, they rely on strict regulatory frameworks as well as participative approaches combining the primary intent of nature safeguarding with recreation and tourism (Mace, 2018).

In Europe, GI has been extensively advocated by the European Union through a series of strategies and reports since the 2000s and the 2010s (European Commission, 2010; European Commission, 2013; Mazza et al., 2011). With the diffusion of the GI as a key planning principle to manage the land use system towards the objectives of ecological restoration and habitat protection - in the United States, the term GI was first used in the 1990s (Grădinaru & Hersperger, 2019) -, planners and policymakers started prefiguring the natural and semi-natural areas around cities as a new urban-rural market (EPA, 2015; Macdonald et al., 2020, 2021; Mace, 2018), designed and managed to provide a wide range of ecosystem

services, while enhancing biodiversity (EC, 2019) and providing overall socioeconomic benefits (Dreiseitl & Wanschura, 2016).

Green infrastructures are more than the simple scaling of the green belt concept. They include natural systems such as water bodies and large green vegetation systems, green vegetative equipments, and small-scale nature-based solutions (NBS) in the urban fabric (i.e., green roofs, green walls, wildlife overpassing).

At the peri-urban scale, the recognised main benefits of GIs are of four types (Natural England and the Campaign to Protect Rural England, 2010):

- the provision of ecosystem services;
- the mitigation and adaptation to climate change;
- a stricter ecological integration between the city and the countryside;
- the promotion of economic competitiveness and local identity.

Compared to greenbelts, GIs require a more complex approach since they provide a more comprehensive set of regulating, provisioning (EEA, 2011), and cultural ecosystem services (Röhring & Gailing, 2005). Green infrastructures contribute to protecting nature, mitigating and adapting to a changing climate, producing energy, increase the quality of life and social cohesion (URBES project). From the perspective of urban planners and local administrators, for example, urban forests and green corridors contrast the fragmentation of the natural habitats and the loss of biodiversity while providing the local community with healthier living conditions and novel job opportunities in tourism and green economy.

Furthermore, GIs can work as *living labs* where stakeholders negotiate the sustainability-related trade-offs and conflicts accompanying green space planning (Nowak et al., 2006; Röhring & Gailing, 2005). For example, Barò et al. (2014) warn policymakers not to consider afforestation as an intervention that is always positive for the air quality and the local climate because it increases the green cover. Empirical evidence shows that the results depend significantly on the features of the area chosen for the intervention and the type of vegetation (Pugh et al., 2012; Vos et al., 2013). Similarly, Blum (2017) underlies that the planning option of transforming natural parks and fields into equipped green areas is favourable for leisure, nature accessibility, and local development, whereas the preservation of the wilderness of the green areas is more efficient in safeguarding ecosystems and biodiversity. In order to achieve the objective of greener sustainable development, GIs thus need a wider complex management framework based on the participation of local stakeholders, policymakers, technicians, and the proactive commitment of citizens (Breiling & Ruland, 2016). Moreover, since the green spaces between the city and the countryside are strategic policy resources for the development of the broader metropolitan and regional systems, an additional constituent factor is adopting a multilevel approach to GIs territorial governance.

3. OPPORTUNITIES AND CHALLENGES IN THE GOVERNANCE OF PERI-URBAN GREEN INFRASTRUCTURES

The shift from greenbelts to peri-urban green infrastructures can also be a late manifestation of the process of metro-regionalization that has affected a more and more numerous group of cities in Europe since the 1980s (Kovács et al., 2019), determining the intensification and expansion of the functional relationships connecting the urban core with its hinterland. In Italy, evidence of this metro-regionalization of the largest metropolises comes from the continuous enlargement, from 1981 to 2011, of the borders of their local labor systems (Rota & Ferlaino). In France, the recognition of the extended mobility flows, and the exchanges of goods and services generated by the urban core has pushed toward a more integrated, holistic, and sustainable approach to urban governance exemplified, for instance, by the establishment, in 2015, of the new “collectivité territoriale” of the Métropole de Lyon.

In the literature, the governance concept identifies a flexible system of participatory approaches and solutions that helps the public and private actors to collaborate and pursue objectives of different natures (Stoker, 1998). It is also the continuous process by which the local actors recompose the interests at stake and coordinate their actions towards a common goal. From a territorial perspective, territorial governance includes both the regulatory decisions by central and local institutions and the informal

public-private agreements between stakeholders and it can also take the form of a discourse (Macdonald et al., 2020, 2021).

On the one hand, larger metropolitan governance systems allow a more comprehensive and coherent approach to the processes that affect the sustainability of the ecosystems and human well-being (mobility, production, consumption, and waste management). On the other hand, the metro-regional upscaling leads to a multiplication of objectives and institutional levels involved in urban planning. The broadening of the functions attributed to the peri-urban green areas, for instance, increases the objectives and processes needing negotiation among stakeholders (Kortelainen, 2010; Macdonald et al., 2020, 2021).

The larger the area of interest, the larger the number of actors (institutional entities, consortia, unions, pacts) to be consulted and involved in decisions. In such a situation, innovative solutions of territorial governance can play a fundamental role in “collectivizing” within a larger community, the quest for the sophisticated skills requested to manage the new emerging “metro rural” region (Dematteis, 2018). Territorial governance can help the construction and management of peri-urban green infrastructures from several perspectives:

- the display of the scale and area of intervention. Enlarging the system’s boundaries suitable for managing the green space multiplies the territorial administrative units and decision centers asking for involvement. This “hyper-territorialization” is a primary challenge of vertical and horizontal coordination (Lella & Rota, 2018; Hoyler, Freytag & Mager, 2006);
- the identification of the interests in play and the relevant stakeholders. Territorial governance is an open and participative process involving all the actors with a specific interest or commitment to the object of the public policy. Also, it favors the coordination across spheres of government, stakeholders, and sectors of society (Soriani, 2015);
- the management of conflicts and trade-offs. The metropolisation of the intervention area also implies a wider variety of green areas to manage (Davies et al., 2006). Besides natural parks and protected areas, peri-urban GIs also include farmland, wetlands, and other blue-green spaces such as private gardens, artificial channels and walking/cycling trails, enlarging the interests and priorities involved. Multilevel territorial governance is a critical tool for the practical management of the trade-offs (between environmental, economic, and social priorities) and equity issues of the planning of green space (ESPON, 2018);
- the prefiguration of resources for future financing (EPA, 2015). More than in the past, the economic and financial sustainability of the processes managed via territorial governance strategies emerges as a fundamental requirement and dimension of assessment;
- the integration of the “ordinary” green planning within other planning tools and the strategic planning for development and sustainability. Multilevel territorial governance is a critical tool for the localization of the UN 2030 agenda, i.e. - as mentioned in section 1 -, the translation of the SDGs into a practical system of local goals and variables coherent with national frameworks and communities’ priorities (UN-Habitat, 2024).

At the same time, further investigation is needed to understand how territorial governance can meet all these challenges altogether (Macdonald et al., 2021). For example, governance solutions to the hyper-territorialization and the containment of the urban sprawl can range from the so-called “soft spaces of governance”, i.e. debating arenas characterized by informality, flexibility, and grassroots participation (Zimmerbauer & Paasi, 2019), to formalized laws and agencies for territorial planning and development (Lucas, 2016). In soft governance, participant-based collaborative practices, goodwill, and self-organization (Jessop, 2000) are used to overcome the lack of coordination between levels of government (Storper, 2014). Conversely, designated agencies may increase further the fragmentation of the decision centers (Macdonald et al., 2020; Freund, 2003; Nelles, 2012).

4. METHOD

The empirical analysis proposed in this study consists of a benchmarking analysis of the governance of a selection of peri-urban green infrastructure in Europe to investigate whether GIs are territorial systems appropriate to organise and manage a viable set of pro-sustainability objectives.

Benchmarking consists of comparing a given organization (which can also be a territorial system such as a city or a region) with a selection of similar entities. It aims to assess relative strengths and weaknesses while getting tips and lessons from the competitors (Lundvall & Tomlinson, 2001). Also, it is used as a tool to improve regional foresight (Koellreuter, 2002) because the learning process resulting from benchmarking can lead to a greater awareness of the objectives and the directions to follow. According to the European Commission (EC, 2006), in a condition of high uncertainty and competition, systematic territorial benchmarking helps to push growth and empowerment while avoiding the *self-referentiality trap* (Purcell & Brown, 2005).

This study, looking at existing approaches to compare urban development politics (Kantor & Savitch, 2005; Willi et al., 2018), proposes a benchmarking of the different territorial agreements and actions implemented to develop a peri-urban green infrastructure. Compared to traditional territorial benchmarking, a different selection of variables and criteria is thus needed. More than the economic, social and environmental dimensions of territories, the analysis will focus on the institutional and organisational involvement of administrative entities, economic actors, third-sector associations and civil society in the planning of the green infrastructure.

For this reason, it is not necessary to provide an extended sample of cases or to construct rankings or classifications. Instead, selecting relevant solutions for GI governance in a reasonably similar institutional and socio-economic context is essential. As a first step, the scientific literature and the reports of international projects (especially ESPON projects and EU Interreg Alcotra initiatives) dealing with European GI have been reviewed to identify comparable experiences in Europe. As a result, the paper identifies the six case studies, listed in Table 1.

Table 1. The peri-urban GIs considered in the benchmarking.

Green Infrastructure	Country	Government Levels	References
Corona Verde	Italy	Municipality of Torino & Metropolitan City of Torino	Barbero (2022); IRES Piemonte (2021); Cassatella (2013); https://www.coronaverde.it/wp/ ; https://www.regione.piemonte.it/web/temi/ambiente-territorio/ambiente/corona-verde
ReihnMain Regionalpark	Germany	Municipality of Frankfurt & Metropolitan Region Frankfurt/Rhein-Main	Dettmar (2012); Husung & Lieser (1996); Macdonald, et al. (2020, 2021); Monstadt & Meilinger (2020); Regionalpark Ballungsraum RheinMain (2019); Siedentop, Fina, & Krehl (2016); https://www.regionalpark-rheinmain.de/ ;
Grüner Ring Leipzig	Germany	Municipality of Lipsia & Lander Leipzig and Nordsachsen	Leipzig (2019); https://gruenerring-leipzig.de/ ; https://una.city/nbs/leipzig/parkbogen-ost-green-belt-project
Regionalpark DreiAnger	Austria	Municipality of Vienna & Stadtdregion Wien-Gerasdorf	Breiling & Ruland (2016); Stadt Wien (2005, 2019); Terada, Yokohari & Amemiya (2008); https://www.gerasdorf-wien.gv.at/Regionalpark_DreiAnger
Parques e Palacios de Sintra-World Heritage Unesco	Portugal	Municipality of Sintra	Magalhães et al. (2007); MAPF (2004); PSML (2014); Rautenstrauch, L. (2015); Ribeiro & Barão (2006); https://whc.unesco.org/en/list/723/
Parco Agricolo del Sud di Milano	Italy	Municipality of Milano & Metropolitan City of Milano	Regione Lombardia (2015); Di Marino & Lapintie (2018); Quaglia & Geissler (2017); Sanesi et al. (2017); https://www.cittametropolitana.mi.it/parco_agricolo_sud_milano/index1.html

Source: Author's elaboration.

The variables for the benchmarking were also identified based on the literature and clustered according to seven categories:

- Origin and evolution. The procedural and sequential nature of green planning in Europe (Castagnoli, 2019) suggests for an evolutionary approach to the analysis of the governance of GIs.
- Territorial characteristics affecting the genesis and governance. This category includes:
 - the extension of the region considered for the management of the GI;

- the administrative and functional partitions intercepted by this region;
- the share of urbanised, agricultural, and blu-green areas distinguished among rivers and other water bodies, forests and wooded areas, paths, and other open spaces, etc.;
- the extension of green protected areas;
- the local demography (i.e., residents and growth rates);
- the local economy (i.e., productive specialisations);
- the local insitutional system (i.e., networks, projects, habits);
- Vision and mission. It is about analysing the rationale, the objectives and the primary services expected by the GI.
- Governance architectures. They are the practical “hard” and “soft” solutions adopted to manage the GI, from institutionalised regulatory agreements, such as plans, programs, agendas, pilot projects in charge of administrative entities, purpose agencies or consortia, to informal collaborative mechanisms, such as incentives and participative platforms.
- Financial resources. It is about estimating, for each case study, the total yearly revenue at the disposal of the governance of the GI, distinguishing between public loans, private contributions and market revenue.
- Partnerships and projects. It is about verifying the presence of development projects that affect the GI. In the last decades, it has been relatively frequent the assumption of GI projects as case studies in international projects. Furthermore, it is quite frequent that the area of interest of the GI intercepts other project areas.
- Monitoring and results. Where possible, information on the results of the green infrastructure project (containment of the urban sprawl, protection of nature and landscape, tourist attractiveness, ecosystem services) are collected and compared.

Sources of data have been national, regional and local political documents addressed to the peri-urban GI (strategic plans, above all), as well as scientific studies, marketing materials, presentations, and brochures. Moreover, in the case of Turin, the participation in the TOPMETRO project by the Piedmont Region and the Metropolitan City of Turin (Cabodi, Rota, & Talamini, 2021; Barbero, 2022), allowed to integrate the information collected via desk analysis with the opinions of six local and regional experts, interviewed between February and May 2020.

5. RESULTS OF THE BENCHMARKING

5.1. The sample

The analysis of the cases selected for the benchmarking (Turin, Frankfurt, Vienna, Leipzig, Sintra and Milan) highlighted a substantial heterogeneity of situations. As the photos that follow also show, significant differences from a territorial point of view are captured both in the socio-economic structure of the concerned regions and in the size, shape and connotation of the green areas (Figures 1-6).

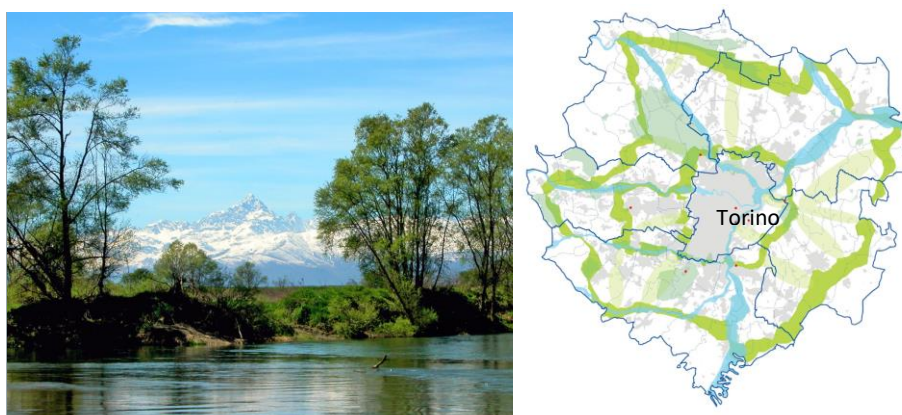


Figure 1. Corona Verde (Metropolitan City of Turin).

Source: Photo: <https://www.regione.piemonte.it/web/temi/ambiente-territorio/ambiente/corona-verde>.
Map: http://www.ecowebtown.it/n_15/15_pa_10.html



Figure 2. ReihnMain Regionalpark (Frankfurt am Main).

Source: Photo: <https://www.regionalpark-rheinmain.de/>;

Map: <https://www.regionalpark-rheinmain.de/portfolio-item/regionalpark-freizeitkarte-rundroute/>



Figure 3. Grüner Ring (Leipzig).

Source: Photo and map: <https://www.leipzig.de/>



Figure 4. Regionalpark DreiAnger (Vienna).

Source: Photo and map: <https://www.wien.gv.at/>

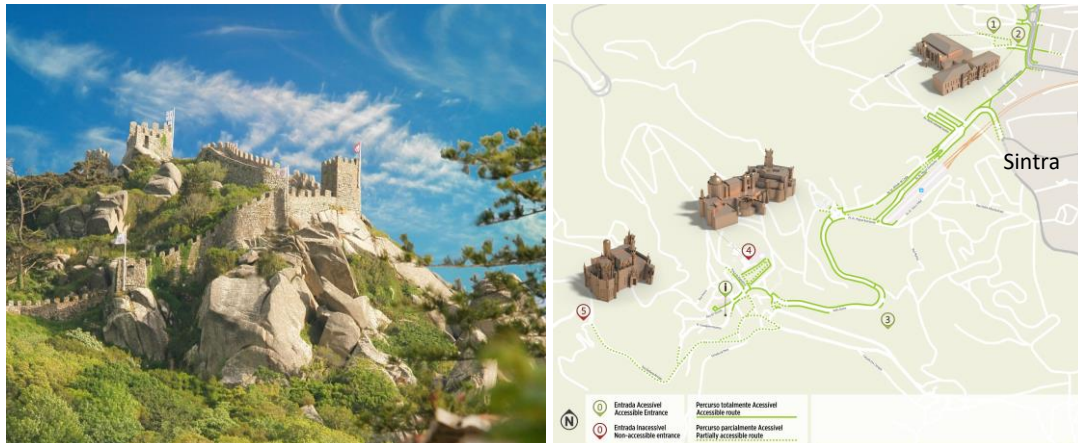


Figure 5. Cultural Landscape of Sintra (Sintra).

Source: Photo: <https://pixabay.com/it/photos/sintra-portogallo-castello-torre-4287725/>;
Map: <https://www.visitportugal.com/it/content/sintra-itinerario-accessibile>



Figure 6. Parco Agricolo Sud Milano (Metropolitan City of Milan)

Source: Photo: <https://www.parks.it/parco.sud.milano/iti.php>; Map: <https://www.parks.it/parco.sud.milano/pdf/Mappa.itinerari.pdf>

For example, in the case of Sintra, the project territory is only 946 hectares, while in the case of the Rhein-Main Regional Park in Frankfurt, there are 446,300 hectares. As regards the population and the political role of the territories, the GIs of Vienna (capital of Austria) and Frankfurt (global economic and financial centre) emerges over the rest of the sample. Land use is also different. In Vienna, the urbanised land occupies 42% of the area of the administrative units involved in the planning of the GI (the City of Vienna and Stadtregion Wien-Gerasdorf); in the other cases, the urbanised land does not overcome the 15%, while non-agricultural green areas range from 16% to 22%. Among the common elements, there is a relevant presence of protected areas (SIC, ZPS, regional and national parks but also UNESCO World Heritage Sites) and water bodies. In the case of Leipzig, in particular, there is a vast system of "blueways" that includes rivers and naturalised quarry lakes.

Regarding the form of the green areas, contrary to what one might imagine, the index of landscape fragmentation calculated by the European Environment Agency (EEA, 2020) for the period 2009-2015 shows that all the cases are affected by relevant fragmentation. Only Turin and Sintra could preserve quite well the spatial continuity of the peri-urban green areas thanks to the local natural barriers of the hill and the Po River, in the case of Turin, and the Atlantic Ocean, in the case of Sintra.

The information and data collected are then analysed according to a set of emerging shared challenges, such as: i. the horizontal, vertical and territorial coordination of the actors; ii. the integration with other plans and projects; iii. the construction of a common territorial identity; iv. the identification of financing models to make governance economically sustainable.

5.2. Coordination of stakeholders

5.2.1. Horizontal governance

It refers to experiences of collaborative governance between two or more equal-level territorial bodies. In the case of Vienna, this aim has been successfully pursued since 2006 via the Stadt Umland Management (SUM), which is a collaborative platform for the co-planning of the metro region Stadtregion Wien/Niederösterreich. One of the objectives of the SUM is to develop the green belt around Vienna further. The strong cooperation between the municipality of Vienna the Länder of Vienna and Lower Austria and almost 60 other entities enabled by the SUM compensates for the lack of an inter-municipal planning body (Kovács et al., 2019). The GRL-Grüner Ring Leipzig unit for the management of the green areas around Leipzig provides another example of horizontal governance (Breiling & Ruland, 2016). Initially created as a voluntary association with equal votes for all the members, it then resulted in an agreement between the City of Leipzig, 13 surrounding municipalities and the counties of "Leipziger Land" and "Delitzsch". Decisions emerge by consensus by the semi-annual City-Region-Conference, which is the body inside the GRL grouping the institutional actors to discuss the projects proposed by the working groups and eventual modifications to the purpose agreement at the basis of the GRL itself.

5.2.2. Vertical governance

This type of governance distinguishes for the involvement in the planning and management of the green infrastructure of a more or less hierarchically nested system of territorial levels. The involvement of actors at different scales is common in all the experiences analysed, including Corona Verde (CV). In the case of Turin, however, the superordinate coordinating unit called "Cabina di Regia" acts more as a "meeting place" between institutional representatives (the Piedmont Region, the Metropolitan City of Turin, six leading Municipalities and the Park Authorities) rather than as a deliberative arena. Differently, the Regional Rural Park of the nearby city of Milano (PASM) presents a "hard governance" structure established by regional legislation. In PASM the management function is entrusted to the Metropolitan City of Milan. In contrast, the Park Regulation assigns the administrative function to the Board of Directors, assisted by the Assembly of Auditors, the Agricultural Technical Committee and the Landscape Commission. In this case, the governance is characterised by a nested hierarchy of competences, from the Region to the Municipalities. The case of Frankfurt is instead emblematic of a failed matching of the many different authorities with jurisdiction on the territories of the green infrastructure. In particular, Macdonald et al. (2019) complain that, in the transition from the initial greenbelt (GrünGürtel) to the Regionalpark RheinMain, the planning of the green peri-urban areas did not adopt effective vertical governance based on a strong authority with a public mandate. The risk, in the perspective of these authors, is the reduction of the Regionalpark to a patchwork of localised initiatives assigned to urban municipalities.

5.2.3. Territorial governance

This type of governance implies the active involvement of a large casuistry of non-institutional local actors such as businessmen, volunteers and "common" citizens and, similarly to the types mentioned above, is present in all the analysed cases. It follows that the territorial governance of GI typically assumes different configurations according to the regional and urban context. In Portugal, for example, the Sintra Cultural Landscape Opinion Council acts as an advisory body supervising the scientific and civil participation of the local community in the development of a sustainable cultural landscape. As an organ of the World Heritage Office, its deliberations are not binding but solely consultative and informative. Nevertheless, it develops a significant action of monitoring the management of the UNESCO area. In Austria, instead, the DreiAnger Regional Park sees the neighbouring municipalities of Vienna and Gerasdorf effectively collaborating on the development of a shared landscape plan entitled "Green Space Connection Bisamberg - Gerasdorf - Norbert-Scheed-Wald". The planning process was characterised by active participation, coordinated communication and integrated actions (walks, inspections, shared decisions). A variety of experts from local development planning, nature protection, agriculture, mobility, water conservation and environmental remediation discussed the Plan. The citizens made significant

contributions by conveying ideas, desires and visions as "daily experts". This approach created a broad basis of the consensus that was fundamental for the subsequent implementation of the interventions. In the case of the Leipzig Green Ring (GRL), the Regional Action Plan (RHK) decided not to subdivide the territory of the GI into sub-areas but to create transversal thematic working groups formed by public and private actors to territorialise the sustainable development into projects promoted by the GI. Also, thanks to the participation of many non-institutional actors, the Leipzig Green Ring is widely recognised as a successful case study for the networking and the building of supra-regional development scenarios. In the case of Frankfurt, an interesting example of a collaborative agreement between the Regionalpark RheinMain and the local territorial actors is represented by the initiative "Farmyard Havens", a network of farmers involved by the Park to provide the visitors of the Park with local agricultural products and other services, such as: bicycle rental, self-harvest of fruit and vegetables, and information. The involvement of farmers is also pursued by the PASM. However, as observed by Sanesi et al. (2017), in this case, the interest in a larger involvement of citizens in the development and planning of green infrastructure remained quite incomplete.

5.3. Integration with other plans and projects

The integration between the governance of peri-urban green and the "ordinary" management tools of the urban and regional territory is probably the most significant challenge that characterises all the cases analysed in the benchmarking. The complexity of the task depends on the one hand on the missed juxtaposition of the borders of the GI with those of the local administrative and functional partitions and the multidimensionality of the concerned tasks; on the other hand, the changes occurred in the last few decades in the political approach to the green and in the availability of public funding have severely tested the settings initially given to the governance of the GI. This is evident in the case of the Rhine-Main park, which assumes the form of an over-extended greenbelt, aiming at bringing within the regional planning a vast set of functions that includes: the conservation of nature, the establishment of regional ecological corridors, the defense and enhancement of the landscape, and the promotion of new services related to wellness, culture and multifunctional agriculture (Gailing, 2007). From the perspective of the Rhine-Main park, this aim is to be realised via project-oriented territorial strategies. In Germany, however, the regional authorities responsible for green protection and planning have no mandate to the construction of the regional greenbelt.

On the contrary, the agency specifically created to develop the GI has no planning powers and few resources. Also, the management of the park was entrusted to six inter-municipal implementation bodies that granted increasing freedoms to the Municipalities to pursue their projects. Municipalities, therefore, emerge as the real protagonists of the construction of the GI.

In the case of Leipzig, the relationship with the planning tools at regional and municipal scale is regulated by a chapter of the Regional Action Plan stating that the development of projects and measures for the implementation of the GI has to be carried out with the active participation of the member Municipalities and the proactive collaboration of the different departments of the City of Leipzig. In this way, the coherence with the objectives of the local, regional, landscape and sectoral planning was also checked. The overlap between different levels of planning that results from the transversal approach of the Action Plan, moreover, is not seen as a weakness, but as the possibility of creating synergies between the various plan tools. However, the fact remains that the GRL Action Plan does not replace the contents of sectoral or urban planning (regional and municipal). As regards the relationship between plans and programs, the Cultural Landscape of Sintra, as a UNESCO site, is considered in all the levels of the spatial planning established by the Portuguese legislation. In particular, specific attention to the planning of the GI of Sintra is given by: i) the Strategic Plan of Sintra released in 2015 (Ribeiro & Barão, 2006); ii) the Green Plan of Sintra released in 2008 (Magalhães, 2007); iii) the initiatives of the Local Action Group (LAG) "Association for Sustainable Development of the Saloia Region"; iv) the Regional plan for forest planning of the Lisbon metropolitan area (MAPF, 2004; PSML, 2014).

The case of Milan is emblematic of the visions for the future that arise from the peri-urban green infrastructure. In 2015, the Metropolitan City of Milan signed the Territorial Development Framework

Agreement (AQST) "Milano Metropoli Rurale" promoted by the Lombardy Region. With this subscription, the Metropolitan City brings PASM back into the interest of the AQST. The agreement unites and confirms the commitment of public and private entities in the consolidation of the rural matrix of the metropolitan area of Milan. The agreement also recognises the role of integrated rural systems and multifunctional agriculture in the containment of land consumption, the provision of ecosystem services, and the construction of new relationships between urban and rural realities. The Territorial Government Plan of the City of Milan approved in 2019, on the other hand, stated the intention to strengthen the metropolitan agricultural space through the enhancement of its productive/market dimension, as well as through the protection of the landscape, the protection of waters and biodiversity, the conservation of traditional cultures and knowledge, and the management of open not urbanised spaces.

5.4. Building a common territorial identity

Regarding the territorial identity, the experiences analysed can be divided into three groups: i) cases always enjoying a strong territorial identity and self-recognition by of the local stakeholders; ii) cases enjoying partial recognition, relating to specific elements of the green infrastructure; iii) cases still "struggling" to build their imaginary. The first group comprises the GI of Sintra and Vienna. Sintra, in particular, benefitted from a unique combination of parks and gardens, which was recognised by UNESCO as a World Heritage site, and the work done by the PSML agency, together with the Heritage Office and the Council of Opinion, in communicating the principles of the Cultural Landscape of Sintra. The origin of the imaginary of the GI of Vienna, instead, can be traced back to the 1905 citizens' mobilisation for the safeguard of the Wienerwald (a historic vast wooded area out of Vienna). An imaginary that was later reinforced by the construction of the Rundumadum pedestrian route, connecting the five areas forming the Viennese forest and meadows belt (Wienerwald, Bisamberg, Marchfeld, Donauraum, and Terrassenlandschaft). The second group includes the case of Frankfurt, where the shifting of green planning from the urban scale (Grüngürtel) to the regional one (Regionalpark RheinMain) determined a weakening of the image of the GI. In particular, some identity elements were missing at the regional scale, such as: i) the landscape quality of the cycle-pedestrian paths, ii) the integration with the urban environment, iii) the presence of artistic installations, iv) the offer of recreational and educational services, v) the programming of a calendar of events. In Leipzig too, a pedestrian circuit reinforces the identity of the GI. However, the success of the image of the Green Ring of Leipzig is mainly due to the choice to open the governance to non-institutional actors and to the capacity of the Grüner Ring Leipzig (GRL) to take part in international events, such as the Conference of regional parks and green rings of Germany (KORG) and the World Waterways Conference.

The third group involves the GIs of Torino and Milano, both characterised by the incapacity to build an overall territorial identity. In Corona Verde, this incapacity relates from one side to the choices to organise the governance around institutional entities only and to divide the territory of the Gi into six groups of Municipalities. From another side, it is the result of the exclusively public nature of the governance and some relevant problems of accessibility and maintenance of the cycle path that constitutes the backbone of the GI. In the case of Milan, the attempt of the Lombardy Region and the Metropolitan City to specialise the GI on the issue of peri-urban agriculture was undermined by the location of the PASM detached from the rest of the metropolitan green areas, by the many delays in the implementation of the envisaged tools and by a substantial inability to create a system between the urban green and the protected and rural spaces around Milan.

5.5. Identification of funding models

Almost all the GIs rely on direct forms of public funding, which can be either local (as in Vienna, Leipzig and Sintra) or metropolitan/regional (as in Turin and Milan) and range from economic subsidies to the provision of services. The green infrastructure of Frankfurt is the only one perceiving for some years a substantial sponsorship by a private actor (i.e. the local airport management company. However, the methods of public funding are very diversified. They range from Municipalities' transfers to European

(Structural Funds as in the case of Turin) and international (Unesco) funding. In the case of municipalities, also, it is not unusual that the contribution is not of an economic type (money transfers through the payment of membership fees as in the case of Frankfurt), rather it assumes the form of a provision of service (as in the cases of Vienna, Sintra and Leipzig). As to the management of funding, the Grüner Ring Leipzig (GRL) delegates this responsibility to the Office for urban green and water management of the City of Leipzig: a solution that allows GRL to avoid additional charges and facilitates the collection of additional funding, too. The maintenance of Sintra's heritage and landscape assets is instead under the responsibility of the public company Parques de Sintra-Monte da Lua (PSML). Apart from receiving the initial capital, this company financially relies primarily on revenues generated from the sale of tickets, from the fees for shops and catering outlets and the rental of event facilities. Revenues also happen in the South Agricultural Park of Milan in the form of payments for mortgages and equipment, services, concessions or penalties. Nevertheless, these entries are limited, and they can partially support the management and governance process. For these purposes, the financing most widely used is that of financial interventions by the regional government, the State and, above all, the European Union (EU). EU funds mainly have been the primary source of financing for both the governance and the realisation of the projects designed to implement the GI. It happened in Torino, the case of Corona Verde. It also happened in Leipzig, with the functioning of the GRL fuelled by the ERDF and LEADER initiatives. Today, increasingly scarce public resources have dramatically increased the level of competition between potential beneficiaries, forcing local authorities to be effective in the construction of proposals and in the ability to combine different sources of funding. The Regional Action Plan (RHK) for the Leipzig Green Ring also offers an interesting lesson from this point of view, imposing coherence between the projects elaborated by the working groups of the Purpose Agreement and the objectives of the European programming 2014-2020.

6. CONCLUSIONS

The benchmarking analysis conducted on the peri-urban GIs of Turin, Frankfurt, Vienna, Leipzig, Milan and Sintra allowed to identify the following issues for successful governance and sustainability:

- organise the various tools (formal and informal) adopted for the management and the development of the green infrastructure into a single governance model: tools that, regardless of their institutional or voluntary nature, must be multilevel and capable of organising a large and heterogeneous set of actors around a complex system of objectives;
- go beyond strategic plans by preferring innovative forms of coordination and flexible groupings of institutions and actors, tailored to the problems and the opportunities to be faced locally;
- provide for superordinate territorial coordination (for example headed by an administrative body or a development agency) in charge of verifying the coherence of the interventions implemented at the territorial level, in a clear framework of competences and relations with the other levels of the government of the territory;
- establish and openly communicate the mechanisms to manage the relationships between the GI interventions and the various policies and territorial plans that intervene in the same area or issues of the green infrastructure;
- plan and organise in the territories of the green infrastructure economic and social functions useful for producing, even in the perception of civil society, the imaginary of a single territory of a metropolitan scale. The range of the options available for this purpose is broad: it is up to the territorial governance of the GI to identify those most suitable for the specific context;
- construct and convey a strong imaginary of the green infrastructure as a tool for local, sustainable development. The green infrastructure has to be promoted internally (through local initiatives and education/training programmes) and externally (through marketing and communication tools) as a distinctive and qualifying element of the territory;
- plan to achieve the objectives of the GI for successive stages, to be defined either in a territorial (planning for successive batches as in the case of Frankfurt) or a functional way (identifying thematic working groups as in Leipzig). In both cases, the decision has to fit in a framework of

coherence with the regional morphology, the planning initiatives and the economic functions expressed by the territory;

- secure financial sources for the coordination of the GI, as well as for the implementation of territorial interventions (not only public, but also private incentives available through crowdfunding tools, marketing). To this end, planners should involve experts in these issues in the very early stages of the construction of the governance model.

Undoubtedly, the implemented method presents some limitations that are worth considering when assuming these findings. First, benchmarking as a comparative procedure is often criticized due to the arbitrariness and opaqueness that characterize it and the tendency to over-simplify the complexity of reality to reduce it to a set of comparable variables and information. Second, the analysis should have been complemented with the results of a larger sample of critical observers and stakeholders to provide a more precise description of the specificities and analogies of the governance processes in the considered GIs. Nevertheless, the indications obtained from this specific benchmarking are pretty consistent with both the current literature on GI governance, and the analysis already developed on the selected case studies, letting us suppose that the analysis was good at catching - at least - the main trends. Macdonald et al. (2020), for example, emphasise the importance of both horizontal coordination between institutions (e.g. municipalities) in multiple policy areas and vertical coordination between institutions that go beyond the simple respect of rules and directives. Moreover, they insist a lot on the design of the perimeters of action, i.e. the identification of the areas of intervention and territorial coordination between different jurisdictions. Concerning the participation of the private sector, many contributions believe that new entrepreneurial approaches to urban and territorial development issues are necessary. While as regards the functions useful to build a unitary imaginary of the territory of the GI, the options discussed in the literature range from transport to urban renewal, technological and social innovation to higher education and training, from services to people and businesses to the organisation of deliberative arenas open to the participation of all the economic categories and the citizens.

Sustainability as a strategic component of the imaginary and the functioning of the green infrastructure is instead poorly emphasised. The issue of the management of the trade-offs between the ecosystem services produced by the GI, for instance, is utterly absent in the cases analysed. The same happens with the issues of the negotiation of contrasting stakeholders' interests and the coherence with the UN SDGs goals of the initiatives carried out. In this sense, emblematic is the claim for additional dedicated funding devoted to the coordination of stakeholders, while the monitoring and evaluating the sustainability is almost ignored.

This carelessness signals a specific weakness of large-scale green infrastructures, plausibly due to the overwhelming complexity of the objectives assumed in a context of institutional fragmentation and limited decisional power.

Finally, an interesting observation concerns the contextualised (i.e. territorialised) and contested (i.e. imbued with power relations) nature of the governance of GI (Macdonald et al., 2020). It means that the planning of GI should start from the construction and of a shared knowledge framework.

Specifically, from the case of Corona Verde, the interviews conducted with the experts in charge of the project allowed to detect the following list of relevant information:

- what the entities with jurisdiction over the territories of the green infrastructure are, and do they develop institutional relationships;
- how the cooperation takes place and what are the voluntary initiatives of local development in place;
- how the functions are governed, which are the network logics that preside over the management of services and the pursuit of economic objectives;
- which are the leading players (institutional or private, individual or collective) contributing to the objectives of the GI;
- what governance architectures and incentives can be used to build the green infrastructure, according to the institutional and legal framework.

The experience of Corona Verde's successes and failures shows that this information is critical both for the selection of the stakeholders to be involved and for the implementation of the governance model.

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USE OF AI TOOLS DECLARATION

The author declares no use of Artificial Intelligence (AI) tools in the creation of this article.

CONFLICTS OF INTEREST

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If the author is already mentioned in the main text then the year should follow the name within parentheses.

- Research by Posea (2005) and Ielenicz (2003) supports...

If the author's name is not mentioned in the main text then the surname and year should be inserted, in parentheses, after the relevant text. Multiple citations should be separated by semicolon and follow alphabetical order.

- The petrographic composition of the massif explains this type of relief (Ielenicz 2003; Posea 2005).

If three or fewer authors are cited from the same citation then all should be listed. If four or more authors are part of the citation then 'et al.' should follow the first author's name.

- (Ielenicz, Comanescu & Nedelea 2010)
- (Ielenicz et al.2008)

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- (Ielenicz 2003a; Ielenicz 2003b)

If you are directly quoting from a work, you will need to include the author, year of publication, and page number for the reference (preceded by "p." for a single page and "pp." for a span of multiple pages, with the page numbers separated by an en dash).

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- According to Ielenicz (2003), "quoted text" (p. 199).
- Ielenicz (2003) found "quoted text" (pp. 199-202).

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- (D. Privitera, 2004; A.C. Privitera, 2019)

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- On climate change ("Climate and Weather", 2010) ...
- Guide to Hydrological Practices (2008)

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Article in a magazine or newspaper:

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Chapter in an edited book:

Privitera, D., Štetić, S., Baran, T., & Nedelcu, A. (2019). Food, Rural Heritage, and Tourism in the Local Economy: Case Studies in Serbia, Romania, Italy, and Turkey. In J. V. Andrei, J. Subic, A. Grubor & D. Privitera (Eds.), *Handbook of Research on Agricultural Policy, Rural Development, and Entrepreneurship in Contemporary Economies* (pp.189-219). IGI Global. DOI: 10.4018/978-1-5225-9837-4.ch010

Conference proceedings (published):

García Palomares, J. C., Gutiérrez Puebla, J., Romanillos Arroyo, G., & Salas-Olmedo, H. (2016). Patrones espaciales de concentración de turistas en Madrid a partir de datos geolocalizados de redes sociales: Panoramio y Twitter. In *Aplicaciones de las Tecnologías de la Información Geográfica (TIG) para el desarrollo económico sostenible* (pp. 131-139). Actas del XVII Congreso Nacional de Tecnologías de Información Geográfica. Málaga, June 29-30 and July 1. <http://congresotig2016.uma.es/downloads/separadas/lt1/García%20Palomares.pdf>

Working paper (more than twenty authors):

De Stefano, L., Urquijo Reguera, J., Acácio, V., Andreu, J., Assimacopolus, D., Bifulco, C., De Carli, A., De Paoli, L., Dias, S., Gad, F., Haro Monteagudo, D., Kampragou, E., Keller, C., Lekkas, D., Manoli, E., Massarutto, A., Miguel Ayala, L., Musolino, D., Paredes Arquiola, J., ... Wolters, W. (2012). *Policy and drought responses–Case Study scale* (Technical report no. 4). DROUGHT-R&SPI project. http://www.isa.ulisboa.pt/ceabn/uploads/docs/proyectos/drought/DROUGHT_TR_4.pdf

Webpage or piece of online content:

Vasile Loghin – Geographical Works. *Volcano Island. Geological, geomorphological and volcanological features.*

<https://vasileloghin.files.wordpress.com/2015/02/insula-vulcano-cu-foto-final.pdf>

Facebook page:

American Association of Geographers - Home [Facebook page]. Facebook. Retrieved September 19, 2022 from <https://www.facebook.com/geographers>

Non-English references should contain, at the end, additional explanation in which language it was written. If the article contains English summary it should be mentioned. For example:

Grahovac, M., Pivac, T. & Nedelcu, A. (2018). Značaj internet prezentacije za razvoj vinskog turizma Banata (Srpski i Rumunski Banat), *SINTEZA 2017, International Scientific Conference on Information Technology and Data Related Research*. (in Serbian with English abstract & summary)

Dinu, M. (2002). *Geografia turismului [Tourism Geography]*. Editura Didactică și Pedagogică. (in Romanian)

Language and Text

Foreign concepts, proper nouns, names of institutions etc.

If the article discusses foreign institutions or businesses, the original name should be provided in parentheses. Foreign terms and phrases should be set in italics and followed by an English translation enclosed in parentheses; for example, *griko* (the good food).

Spelling

Submissions must be made in English. Authors are welcome to use American or British spellings as long as they are used consistently throughout the whole of the submission.

- colour (UK) vs. color (US)

When referring to proper nouns and normal institutional titles, the official, original spelling must be used.

- World Health Organization, *NOT* World Health Organisation

Grammar

American or English grammar rules may be used as long as they are used consistently and match the spelling format (see above). For instance, you may use a serial comma or not.

- red, white, and blue *OR* red, white and blue

Authors not proficient in English should have their manuscripts checked before submission by a competent or native English speaker. Presenting your work in a well-structured manuscript and in well-written English gives it its best chance for editors and reviewers to understand it and evaluate it fairly.

Font

The font used should be commonly available and in an easily readable size. This may be changed during the typesetting process.

Underlined text should be avoided whenever possible.

The use of bold or italicised text to emphasise a point is permitted, although it should be restricted to minimal occurrences to maximise its impact.

Lists

Use bullet points to denote a list without a hierarchy or order of value. If the list indicates a specific sequence then a numbered list must be used.

Lists should be used sparingly to maximise their impact.

Acronyms and Abbreviations

Except for units' measurement, abbreviations are strongly discouraged. With abbreviations, the crucial goal is to ensure that the reader – particularly one who may not be fully familiar with the topic or context being addressed – is able to follow along. Spell out almost all acronyms on first use, indicating the acronym in parentheses immediately thereafter. Use the acronym for all subsequent references.

- Research completed by the International Geographical Union (IGU) shows ...

A number of abbreviations are so common that they do not require the full text on the first instance of use. Examples of these can be found [here](#).

Abbreviations should usually be in capital letters without full stops.

- USA, *NOT* U.S.A.

Common examples from Latin do not follow this rule, should be lower case and can include full stops.

- e.g., i.e., etc.

Use of footnotes/endnotes

Use endnotes rather than footnotes (we refer to these as 'Notes' in the online publication). These will appear at the end of the main text, before 'References'.

Notes should be used only where crucial, clarifying information needs to be conveyed.

Avoid using notes for the purposes of referencing; use in-text citations instead.

Symbols

Symbols are permitted within the main text and datasets as long as they are commonly in use or an explanatory definition is included on their first usage.

Hyphenation, em and en dashes

For guidelines on hyphenation, please refer to an authoritative style guide, such as The Chicago Manual of Style (16th ed.) (US English) or Oxford's New Hart's Rules (UK English). Be consistent in your style of hyphenation.

Em dashes should be used sparingly. If they are present they should denote emphasis, change of thought or interruption to the main sentence; em dashes can replace commas, parentheses, colons or semicolons.

En dashes can be used to replace 'to' when indicating a range. No space should surround the dash.

- 10–25 years *OR* pp. 10–65

Numbers

For numbers zero to nine please spell the whole words. Use figures for numbers 10 or higher. We are happy for authors to use either words or numbers to represent large whole numbers (i.e. one million or 1,000,000) as long as the usage is consistent throughout the text.

If the sentence includes a series of numbers then figures must be used in each instance.

- Thermal springs were found in the north of Bucharest at depths of 100, 175, and 230 m.

If the number appears as part of a dataset, in conjunction with a symbol or as part of a table then a figure must be used.

- This study confirmed that 7% of...

If a sentence starts with a number it must be spelt, or the sentence should be re-written so that it no longer starts with the number.

- Fifteen examples were found to exist... *RE-WRITTEN*: The result showed that 15 examples existed...

Do not use a comma for a decimal place.

- 2.56 *NOT* 2,56

For numbers that are less than one a '0' must precede the decimal point.

- 0.29 *NOT* .29

Units of measurement

Symbols following a figure to denote a unit of measurement must be taken from the latest [SI brochure](#).

Formulae

Formulae must be proofed carefully by the author. Editors will not edit formulae. If special software has been used to create formulae, the way it is laid out is the way it will appear in the publication.

Tables

Tables must be created using a word processor's table function, not tabbed text.

Tables should be included in the manuscript. The final layout will place the tables as close to their first citation as possible.

All tables must be cited within the main text and numbered with Arabic numerals in consecutive order (e.g. Table 1, Table 2, etc.).

Each table must have an accompanying descriptive title. This should clearly and concisely summarise the content and/or use of the table. A short additional table legend is optional to offer a further description of the table.

The title should be above the table (font 10pt) and the source of the data below (font 10pt).

Example:

Table 1. This is a table. Tables should be placed in the main text near to the first time they are cited

Year	Number of foreign tourists (millions)	Foreign currency cashing (USD billions)	Cashing increase compared to 1950
1950	25,3	2,1	-
1990	410,4	300,4	143,0
2010	940,0	919,0	437,6
2013	1, 087,0	1, 159,0	551,9

Source: UNWTO, 2015

Tables should not include:

- Rotated text
- Images
- Vertical and Diagonal lines
- Multiple parts (e.g. 'Table 1a' and 'Table 1b'). These should either be merged into one table, or separated into 'Table 1' and 'Table 2'.

NOTE: If there are more columns than can be fitted on a single page, then the table will be placed horizontally on the page. If it still cannot be fitted horizontally on a page, the table will be broken into two.

Figures

All photographs, maps and graphs have to be named as Figure. The figures have to be enclosed in the text, in their order of appearance and should be numbered consecutively using Arabic numbers. The title (font10pt) has to be below the figure. All figures (photographs and maps) have to be submitted as a separate file. All graphs have to be submitted as a separate file in MS Excel format with all the data needed for making the graph. The file should be named as the number of the figure in the main text. Example: Figure 1, Figure 2, etc. If a figure has been previously published, acknowledge the original source. Example:



Figure 1. This is a figure. Schemes follow the same formatting. If there are multiple panels, they should be listed as: **(a)** Description of what is contained in the first panel; **(b)** Description of what is contained in the second panel. Figures should be placed in the main text near to the first time they are cited. A caption on a single line should be centered.

Source: Adrian Nedelcu, 2014.



Figure 1. Sardinia. La Pelosa beach with marine abrasion forms.
Source: Adrian Nedelcu (2019).

NOTE: All figures must be uploaded separately as supplementary files during the submission process, if possible in colour and at a resolution of at least 300dpi. Each file should not be more than 20MB. Standard formats accepted are: JPG, TIFF, GIF and PNG. For line drawings, please provide the original vector file (e.g. .ai or .eps).

Reviewer Suggestions

During the submission process, please suggest three potential reviewers with the appropriate expertise to review the manuscript. The editors will not necessarily approach these referees. Please provide detailed contact information (address, phone, e-mail address). The proposed referees should neither be current collaborators of the co-authors nor have published with any of the co-authors of the manuscript within the last five years. Proposed reviewers should be from different institutions to the authors. You may suggest reviewers from among the authors that you frequently cite in your paper.

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