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AN APPRAISAL OF FACTORS AFFECTING SUSTAINABLE PUBLIC HOUSING DEVELOPMENT IN LAGOS, NIGERIA

Abstract. Housing is a basic need of man, as it provides security, privacy and protection from negative impacts of the environment. In recent years, most of the urban centers in Nigeria are fast experiencing uncontrolled population increase, with insignificant housing provision, which thus result in housing shortage. The population continues to increase and the demand for quality housing increases probably at the same rate. This research is therefore aimed at appraising Factors Affecting Sustainable Public Housing Development in Lagos, the researcher was able to identify the socio-economic and demographic attributes of residents in the study area, which enables the researcher examine several factors inhibiting sustainable housing provision in the study area, information regarding the research was elicited from the sample population through the use of structured questionnaire. The research findings reveal some basic necessities are provided in the rural centers with improved standard of living and comfort, and basic employment opportunities, the phenomenon of rural urban drift will be stemmed to the barest minimum, the abundant human resources that are abandoned in the rural areas can therefore be positively harnessed in order to make essential input into rural and urban housing construction.

Keywords: affordability, housing, socio-economic, sustainable, housing provision

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1. Introduction

Housing is one of the basic needs of man due to his desire for security, privacy and protection from negative impacts on the environment. In the social life of every Nigerian, home ownership boosts one's status in the society (Nubi, 2008). From the point of view of built environment, housing plays an important role in the enhancement of human health, social and economic welfare of the society. Inspite of numerous efforts by successive Nigerian governments and even the private sector to tackle housing challenges in the country the residential housing problems seem to escalate beyond solution (Yoade, 2021).

Rapid development and concentration of population in cities pose high demands for housing with the construction sector accounted as a key sector contributing to sustainable challenges. As such, sustainability in providing adequate housing is a subject that demands critical attention. Sustainable housing takes into account economic, environmental, and social issues and must equally satisfy the long-term sustainable outcomes (Bowyer, 2008; Brandon & Lombardi, 2011). However, integrating sustainability into affordable public housing are challenging due to time and financial constraints (Ibem & Azuh, 2011; Ghani, 2012; Gan, 2017; Atoro, Yoade & Atoyebi, 2023).

Affordability would disappear if households spend more than 30% of their income on housing as this leaves little for other non-housing necessities such as food, clothing, medical, education, and utility bills (Yoade, 2019; Feldman, 2002). Besides the life-cycles of buildings, sitting and location of the buildings are some other contentious issues. Providing affordable housing in locations away from the city means longer commuting distance and higher energy consumptions, with the lower-income group, tend to be less likely to move than those from higher levels (Taylor, 2000; Mabogunje, 2004; Turcotte, 2006; Hashim, 2014; Hamid & Long, 2017; Wahi 2018; Yoade & Adeyemi, 2019). It can pose substantial threats to natural resources, in the instances of opening up land in hill slopes and coastal seafront causing degradation of environmental features. Presently, there are already in place various screening and evaluation processes before a project development can be implemented. But none has specifically focused on the high-rise affordable housing sector (Hamid & Long, 2017).

In Nigeria, the urban housing situation continues to deteriorate in the absence of an adequate arrangements to ensure that housing facilities expanded in line with the rapidly population growth (Ajanlekoko, 2001; Agbola & Olatubara, 2003; Mabogunje, 2003; Federal Government of Nigeria, 2012; Iheme, 2017). Despite the past efforts of the nation's housing problem, it was evident that the combined effort of the public and private sectors over the past successive government plans had continued to fall far short of housing need. Past governments had tended to leave this important sector almost entirely to private effort, concentrating itself on the provision of limited number of residential quarters for its deserving officers (National Housing Policy, 2010; Omole, 2001).

Bowyer (2008) noted that the major symptoms of urban housing problems include: an absolute shortage of housing units, the emergence and proliferation of slums and squatter settlement especially in large cities, rising house rents; and a growing inability of citizens to buy or build their own houses. Individual effort to build or own a residence becomes quits difficult by the majority of the people subject to number of constraints (Franks, 2006; Aribigbola, 2008; Clement & Kayode, 2012; Yoade & Olatunji, 2022). As a matter of fact, the quality of life in any given environment is greatly influenced by the nature and standard of built-up structures particularly residential properties. A cursory look at past housing policies and programmes in Nigeria reveals that, effective solutions to housing problems in general, and low-income housing in particular are yet to be found. The housing situation has deteriorated continuously due to rapid natural population growth, increasing rural-urban migration etc.

The need for public housing schemes to meet some basic sustainability parameters has continued to be of concern to housing policy makers, developers, experts, and researchers across the world. Savaya et al. (2008) explained that since 1987 when the World Commission of Environment and Development Report brought to the fore the issues of sustainable development, experts involved in the design and implementation of social programmes have been exploring strategies for achieving sustainability in such schemes. In the context of housing, Chiu (2003) noted that until all the sustainability aspects of

housing are adequately researched and integrated, it would not be possible to seek a sustainable development path for housing".

Therefore, this study examined factors affecting sustainable public housing development in Lagos.

2. Study area

Lagos State is one of the 36 States in the Federal Republic of Nigeria. Lagos State is located in the south-western part of Nigeria. It lies approximately between longitude 2°42°E and 3°42'E and latitude 6°22'N and 6°52'N. The Atlantic coastline of about 180km formed the boundary at the south, to the west it is bounded by Benin republic while it is bounded in the northern and eastern part by Ogun State (Figures 1 and 2).

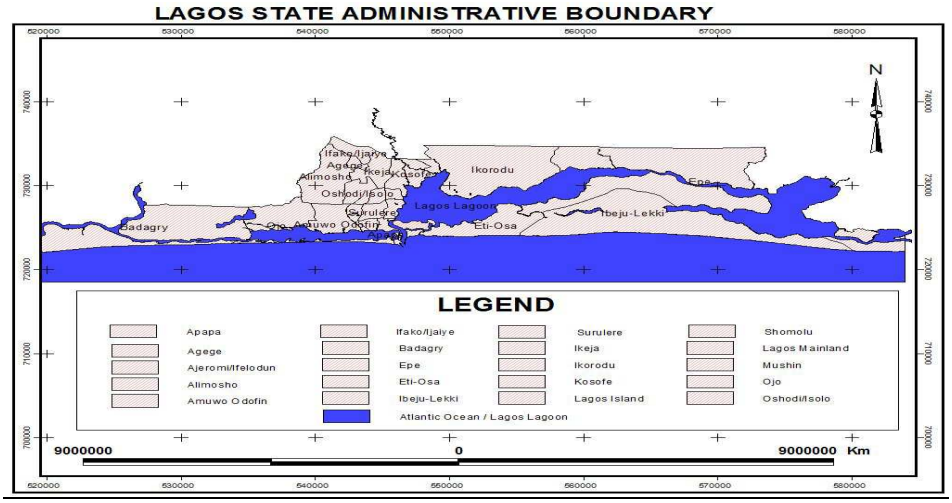

Figure 1. Lagos State administrative boundary
(Source: Lagos State, GIS laboratory*)*

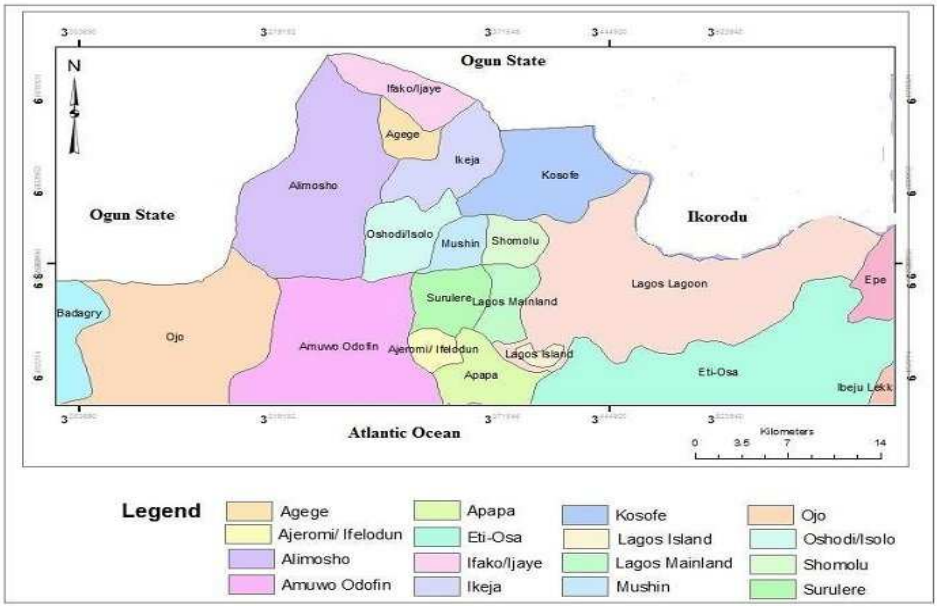

Figure 2. Map of Showing Local Governments in Lagos
(Source: Lagos State University, GIS Laboratory, August 2022*)*

Lagos State climate is generally classified under tropical region with alternate dry and wet season. It rains throughout the year especially in the coastal areas. There are also peak periods in June, July, September and October months every year. It has temperature range of 28ºc to 33ºc. Temperature is high, about 30ºC and almost uniform throughout the year. Relative humidity is also uniform with occasional low (65 percent) during the short dry season. Rainfall is the convectional type aided by sea breeze. This sea breeze has been responsible for the uniform temperature of the area. The wind is usually south westerly during wet season and north' easterly during the dry season. Harmattan is not always severe in the state because of the ameliorating effects of the sea. However, the pleasant condition brought by the harmattan is usually a welcome change.

It is characterized by swamp forest and coastal plants especially around the riverine and coastal part. Lagos is characterized by many lagoons and sandy beaches. The coastline is muddy, swampy and waterlogged. Geographically, the area is underlain by recently laid

sedimentary rock composed mainly of alluvial materials from the coastline to about 10km northward; the soil is muddy whereas there are pockets of areas where there is unconsolidated sandstone. The dominant people were Yoruba tribe.

3. Methodology

The data for this study were primary and secondary data. The primary was sourced from field survey, and through the use of structured questionnaire. The questionnaire was constructed by the researcher aimed at providing answers to some of the research questions, the participants were asked to furnish information with regards to their gender, educational level, age, marital status, monthly income, size of household which are categorized as demographic characteristics and the second section was aimed at providing answers to earlier formulated questions, to enable the researcher do necessary hypotheses testing. The secondary data consisted of Maps of the study area which was sourced from e-library.

The sample size for the field survey was systematically randomly selected from various locations in the study area. The houses in the sample area are well numbered, and, the odd numbers in the various identified streets were sampled, while a respondent is selected from each house until the entire. However, systematic sampling technique was used in selecting residents to be sampled. The first building at the street entrance was selected, then subsequent unit of investigation was every 20^{th} residential building in the area, representing 10% of all residential buildings in the selected wards of the study area. One hundred individual (100) were sampled.

On the other hand, a total of fifty (50) questionnaire was also allotted to various housing stakeholders, such as developers, engineers, contractors etc. that were met on site during the field work, while fifty (50) instrument was also allotted to government agencies/administrators in Ojo local government area respectively. Thus, a total number of two hundred (200) respondents were covered for the study. Both descriptive and inferential statistics were used for the analysis of data collected.

4. Findings and discussion

The research reveals the age range of the respondents as follows, 14.5% are below 18 years, 21.5% are between 18-25 years, 35.5% are 26-35 years, 11% are between 36-45 years, 13.5% are between 46-55 years, while 4% are above 55 years respectively. The research therefore reveals larger percentage of respondents between 26-35 years, the research also reveal the sex of sampled respondents as follows, 52.5% are male while 47.5% are female respectively, the research thus reveal larger percentage of male respondents, the research reveal the marital status of respondents as follows, 28% are single, 61.5% are married, 7% are divorced while 3.5% are Widow/Widower respectively, the research however reveal larger percentage of married respondents.

The research is also aimed at revealing the occupation of the sampled respondents which are presented as follows, 35% are into business, 31% are into trading, 12.5% are civil servant. 17.5% are students while 4% engages in other form of businesses, the research thus reveals larger percentage of the respondents are into one form of business or the other, the research also reveal the education level of the respondents as follows, 32.5% has obtained Primary 6, 38% has obtained WAEC, 18% has obtained OND/NCE, 9% has obtained HND/ BSC while 2.5% has obtained Post Graduate/M.Sc. respectively, the research therefore reveal larger percentage of respondents that has obtained WAEC. The income level of the respondents on a monthly basis is presented as follows, 19.5% less than N50,000, 29.5% between N51,000 – 100,000, 31% between N101,000-150,000, 12.5% between N151,000 – 200,000, 3% between N201,000 – 250,000, 3% also between N251,000 – 300,000, while 1.5% earn over 300,000 respectively. The household size of the sampled respondents are as follows, 42% are 1-5people's, 51.5% are between 6-10people's, 6.5% are between 11-15 people's as presented in Table 1.

Table 1

Demographic characteristics of respondents

Variables		Frequency	Percentage
Age			
Below 18 years		29	14.5
18-25 years		43	21.5
26-35 years		71	35.5
36-45 years		22	11.0
46-55 years		27	13.5
above 55 years		8	4.0
Total		200	100.0
Sex			
Male		105	52.5
Female		95	47.5
Total		200	100.0
Marital Status			
Single		56	28.0
Married		123	61.5
Divorced		14	7.0
Widow/Widower		7	3.5
Total		200	100.0
Occupation			
Business		70	35.0
Trading		62	31.0
Civil servant		25	12.5
Students		35	17.5
Others		8	4.0
Total		200	100.0
Education level			
Primary 6		65	32.5
WAEC		76	38.0
OND/NCE		36	18.0
HND/ BSC		18	9.0
Post Graduate/M.Sc.		5	2.5
Total		200	100.0
Income level monthly			
Less than N50,000		39	19.5
N51,000 – 100,000		59	29.5
N101,000-150,000		62	31.0
N151,000 – 200,000		25	12.5
N201,000 – 250,000		6	3.0

N251,000 – 300,000		6	3.0
Over 300,000		3	1.5
Total		200	100.0
Size of household			
1-5people's		84	42.0
6-10people's		103	51.5
11-15 people's		13	6.5
Total		200	100.0

Source : Field Survey, 2022

The research reveals the time taken to acquire registered plot by various respondents, 23% takes 3-6 months, 32.5% takes 6-12 months, while 44.5% of the respondents was after one year before they could acquire a registered plot, which therefore reveals it takes longer than necessary before aspiring landlord can get a registered plot. However, the respondents pointed out the following as part of the difficulties experienced in the land acquisition process, 8% said deposit fee, 11% processing fee, 8% reproduction of building plan, 9% reproduction of deeds, 5% conversion process, 16.5% are acclaimed to staff attitude while 42 attributed it to all of the above mentioned.

The researcher was able to identify the respondents process of land acquisition as follows, 31% through informal acquisition, 17.5% through local government, 7.5% through sales, 7% through ward head, 9.5% through gift, 7.5% through lease and sublease respectively, 5.5% through sublease while 7% are through pledge, the research reveal majority of the land purchased are through informal acquisition, which could be attributed to the rigorous process involved in the land acquisition process, as 4.5% considered it very simple, 12.5% simple, 27% fair, 35% difficult while 21% considered it very difficult. The research reveals majority of the respondents considered the land acquisition process as being difficult.

The research reveals the source financing their project development, 26% were through personal savings, 18% through bank loan, 32.5% through savings/ bank loan while 23.5% were through housing loan. It takes 12.5% of the respondents less than a year to save it, 21% 1-2 years, 29.5% 3-8 years, while 37% more than 8 years. The research reveals it takes the respondents more than 8 years to garner fund for their housing project as presented in Table 2.

Table 2

Housing development / provision

Time taken to acquire registered plots		
3-6 Months	46	23.0
6-12 Months	65	32.5
After one year	89	44.5
Total	200	100.0
Difficulties experienced in the land acquisition		
Deposit fee	16	8.0
Processing fee	23	11.5
Reproduction of building plan	16	8.0
Reproduction of deeds	18	9.0
Conversion process	10	5.0
Staff attitude	33	16.5
All of the above	84	42.0
Total	200	100.0
Procedures for land acquisition		
Through informal acquisition	62	31.0
Through local government	35	17.5
Through sale	15	7.5
Through ward head	14	7.0
Through gift	19	9.5
Through inheritance	15	7.5
Through lease	15	7.5
Through sublease	11	5.5
Through pledge	14	7.0
Total	200	100.0
How would you rate the land acquisition process?		
Very simple	9	4.5
Simple	25	12.5
Fair	54	27.0
Difficult	70	35.0
Very difficult	42	21.0
Total	200	100.0
Source of financing development		
Personal Saving	52	26.0
Bank Loan	36	18.0
Saving/ Bank Loan	65	32.5
Housing Loan	47	23.5
Total	200	100.0

Time taking to save money		
Less than one year	25	12.5
1-2 years	42	21.0
3-8 years	59	29.5
More than 8 years	74	37.0
Total	200	100.0

Source : Field Survey, 2022

Hypothesis One:

H_0: There is no social aspect of housing provision in Lagos
H_1: There is social aspect of housing provision in Lagos

The hypothesis tested reveals a calculated value of 84.820, and tabulated value of 81.698 (Table 3). The result therefore reveals the calculated value is greater than the tabulated value, therefore the earlier stated null hypothesis which shall be foregone while the alternative hypothesis which says There is social aspect of housing provision in Lagos shall be uphold because it has statistical support.

Table 3

Chi-Square Tests (Hypothesis One)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	84.820[a]	4	.000
Likelihood Ratio	81.698	4	.000
Linear-by-Linear Association	.282	1	.595
N of Valid Cases	200		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 1.38.
Source: Authors' contribution

The respondents reveal information about the environmental condition of the study area as follows, availability of drainage for flood control, 77% possesses drainage while 23% does not possess drainage, the research reveals a larger percentage of respondents with drainage system. The research also reveals the respondents waste management system as follows, 3% through bin, 10.5% Dino bin, 26% dumpsite, 52% LAWMA/PSP, while 8.5% dispose off their waste into the Lagoon, the

research reveals majority of the respondents patronize the LAWMA/PSP. The research also reveals the distance of the respondents to the bus-stop, 55.5% Below100meters, 28% Between 101-500 meters, 11% Between 501meter-1kilometer, while 5.5% takes over 1kilometer. The distance to the market is as follows, 37.5% Below100 meters, 34% Between 101-500 meters, 19.5% Between 501meter-1kilometer, 9% over 1kilometer. The distance to school is as follows, 28.5% Below100 meters, 38% Between 101-500 meters, 22.5% Between 501meter-1kilometer while 11% takes over 1kilometer. The research also reveals how secured the study area is, 10% said it is highly secured, 51% fairly secured, 39% poorly secured. The research reveal the neighbourhood is fairly secured, the research is also aimed at revealing if the dwelling is considered affordable, 18% said yes, while 82% said no as presented in Table 4.

Table 4

Environmental Quality

Availability of drainage for flood control		
Yes	154	77.0
No	46	23.0
Total	200	100.0
Waste management facility		
Bin	6	3.0
Dino Bin	21	10.5
Dump site	52	26.0
LAWMA/ PSP	104	52.0
Dispose in Lagoon	17	8.5
Total	200	100.0
Distance to the bus-stop		
Below100meters	111	55.5
Between 101-500 meters	56	28.0
Between 501meter-1kilometer	22	11.0
over 1kilometer	11	5.5
Total	200	100.0
Distance to market		
Below 100 meters	75	37.5
Between 101-500 meters	68	34.0
Between 501meter-1kilometer	39	19.5
over 1kilometer	18	9.0
Total	200	100.0

Distance to School		
Below 100 meters	57	28.5
Between 101-500 meters	76	38.0
Between 501meter-1kilometer	45	22.5
over 1kilometer	22	11.0
Total	200	100.0
How secured is the neighbourhood?		
Highly secured	20	10.0
Fairly secured	102	51.0
Poorly secured	78	39.0
Total	200	100.0
In your own opinion do you think this dwelling unit is affordable to you?		
Yes	36	18.0
No	164	82.0
Total	200	100.0

Source : Field Survey, 2022

Hypothesis Two:

H_0: There is no environmental quality aspect of housing provision in Lagos
H_1: There is environmental quality aspect of housing provision in Lagos

The hypothesis tested reveals a calculated value of 98.185, and tabulated value of 105.483. The result therefore reveals the calculated value is less than the tabulated value, therefore the earlier stated null hypothesis which states that there is no environmental quality aspect of housing provision in Lagos shall be uphold because it has statistical support as presented in Table 5 below.

Table 5

Chi-Square Tests (Hypothesis Two)

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	98.185[a]	16	.000
Likelihood Ratio	105.483	16	.000
Linear-by-Linear Association	5.698	1	.017
N of Valid Cases	200		

a. 13 cells (52.0%) have expected count less than 5. The minimum expected count is .72.

The research is aimed at identifying factors that Can Influence Sustainability of Housing Provision. The research reveals if Training of local contractors on the use of local material will enhance housing provision sustainability, 35.5% strongly agree, 41.5% agree, 8% undecided, 9.5% disagree, 5.5% strongly disagree respectively. The research reveals larger percentage of agreed respondents. The research also reveals if the adoption of the use of local material does not contribute to sustainability of housing provision, 25% strongly agree, 47.5% agree, 12.5% undecided, 9.5% disagree, 5.5% strongly disagree, the research reveal larger percentage of agreed respondents.

The research is also aimed at revealing if stabilizing the housing environment will ensure maximal benefit of state expenditure on and mobilizing private sector investment will aid sustainability of housing provision, 19% strongly agree, 44.5% agree, 14.5% undecided and 14.5% disagree, and 7.5% strongly disagree. The research also reveals if the Establishment and mobilization of housing subsidy and credit programme will Influence Sustainability of Housing Provision, 23.5% strongly agree, 52% agree, 9.5% undecided and disagree, while 5.5% strongly disagree.

The research is also aimed at revealing if Facilitation of speedy release of allocated land does not contribute to sustainability of housing provision, 26% strongly agree, 47% agree, 12% undecided, 9.5% disagree and 5.5% strongly disagree respectively as presented in Table 6 below.

Table 6

Environmental Factors That Can Influence Sustainability of Housing Provision

Research Questions	SA	A	U	D	SD
Training of local contractors on the use of local material will enhance housing provision sustainability	71 (35.5)	83 (41.5)	16 (8.0)	19 (9.5)	11 (5.5)
The adoption of the use of local material does not contribute to sustainability of housing provision	50 (25)	95 (47.5)	25 (12.5)	19 (9.5)	11 (5.5)
Stabilizing the housing environment will ensure maximal benefit of state expenditure on and mobilizing private sector investment will aid sustainability of housing provision	38 (19)	89 (44.5)	29 (14.5)	29 (14.5)	15 (7.5)

Establishment and mobilization of housing subsidy and credit programme will Influence Sustainability of Housing Provision	47 (23.5)	104 (52)	19 (9.5)	19 (9.5)	11 (5.5)
Facilitation of speedy release of allocated land does not contribute to sustainability of housing provision	52 (26)	94 (47)	24 (12)	19 (9.5)	11 (5.5)

Source: Field Survey, 2022

Hypothesis Three:

H_0: There are no factors influencing sustainability of housing provision in Lagos

H_1: There are factors influencing sustainability of housing provision in Lagos

The hypothesis tested reveals a calculated value of 88.082, and tabulated value of 81.739. The result therefore reveals the calculated value is greater than the tabulated value, therefore the earlier stated null hypothesis which shall be foregone while the alternative hypothesis which says There are factors influencing sustainability of housing provision in Lagos shall be uphold because it has statistical support as presented in Table 7 below.

Table 7

Chi-Square Tests (Hypothesis Three)

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	88.082[a]	16	.000
Likelihood Ratio	81.739	16	.000
Linear-by-Linear Association	17.951	1	.000
N of Valid Cases	200		

a. 13 cells (52.0%) have expected count less than 5. The minimum expected count is .61.

Table 8

Residents' perception of housing affordability

Research Questions	SA	A	U	D	SD
Residential affordability depends on the cost of land	55 (27.5)	97 (48.5)	18 (9)	19 (9.5)	11 (5.5
Residential affordability depends on the materials used	57 (28.5)	93 (46.5)	20 (10)	19 (9.5)	11 (5.5)
Residential affordability depends on design of building	41 (20.5)	103 (51.5)	26 (13)	19 (9.5)	11 (5.5)
Residential affordability depends on professional charges	60 (30)	94 (47)	16 (8)	19 (9.5)	11 (5.5)
Residential affordability depends on mortgage charges/rate	55 (27.5)	67 (33.5)	36 (18)	29 (14.5)	13 (6.5)
Residential affordability depends on excessive charges to make profit by developer	58 (29)	78 (39)	34 (17)	19 (9.5	11 (5.5)
Residential affordability depends on too many demand/customer	83 (41.5)	71 (35.5)	16 (8)	19 (9.5)	11 (5.5)
Residential affordability depends on location of land	44 (22)	77 (38.5)	37 (18.5)	29 (14.5)	13 (6.5)
Residential affordability depends on economy of the country	98 (49)	58 (29)	16 (8)	17 (8.5)	11 (5.5)

Source: Field Survey, 2022

The research is also aimed at revealing the perception of the respondents on affordability. It reveals if residential affordability depends on the cost of land, 27.5% strongly agree, 48.5% agree, 9% undecided, 9.5% disagree, 5.5% strongly disagree, the research reveal a larger percentage of agreed respondents. It also reveals if Residential affordability depends on the materials used, 28.5% strongly agreed, 46.5% agree, 10% undecided, 9.5% disagree, 5.5% strongly disagree respectively.

The research is also aimed at revealing if residential affordability is a function of building design, 205% strongly agree, 51.5% agree, 13% undecided, 9.5% disagree, 5.5% strongly disagree. It also reveals if it depends on professional charges, 30% strongly agree, 47% agree, 8% undecided, 9.5% disagree, 5.5% strongly disagree, the research reveal a larger percentage of agreed respondents.

The research is also aimed at revealing if residential affordability depends on mortgage charges/ rate, 27.5% strongly agree, 33.5% agree, 18% undecided, 14.5% disagree, 6.5% strongly disagree, it also reveal if it depends on excessive charges to make profit by developers, 29%

strongly agree, 39% agree, 17% undecided, 9.5% disagree, 5.5% strongly disagree, it also reveals if residential affordability depends on too many demand/customer, 41.5% strongly agree, 35.5% agree, 8% undecided, 9.5% disagree, while 5.5% strongly disagree.

The research is also aimed at revealing if residential affordability depends on location of land, 22% strongly agree, 38.5% agree, 18.5% undecided, 14.5% disagree, 6.5% strongly disagree. It also reveals if it depends on the economy of the country, 49% strongly agree, 29% agree, 8% undecided, 8.5% disagree, while 5.5% strongly disagree as presented in Table 8.

Hypothesis Four:

H_0: There is no economic (affordability) aspect of housing provision in Lagos

H_1: There is economic (affordability) aspect of housing provision in Lagos

Note: The Null hypothesis shall the rejected if the calculated value is greater than tabulated value.

The hypothesis tested reveals a calculated value of 170.884, and tabulated value of 185.042. The result therefore reveals the calculated value is less than the tabulated value, therefore the earlier stated null hypothesis which states that there is no economic (affordability) aspect of housing provision in Lagos shall be uphold because it has statistical support as presented in Table 9 below.

Table 9

Chi-Square Tests (Hypothesis Four)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	170.884[a]	12	.000
Likelihood Ratio	185.042	12	.000
Linear-by-Linear Association	70.535	1	.000
N of Valid Cases	200		

a. 5 cells (25.0%) have expected count less than 5. The minimum expected count is 1.62.

5. Conclusions

The government of Nigeria seems to favor urban development through provision of major social amenities, industrial development, infrastructure investments, social services education and food in the urban centers. The resultant effects of this and other factors are population increase leading to rapid growth of slum architecture called squatter settlement, affecting the urban poor, because of lack of sustainable housing provision for the teeming population constantly migrating to the urban for a better future. It can therefore be concluded that if these basic needs are provided in the rural centers with improved standard of living and comfort, and basic employment opportunities, the phenomenon of rural urban drift will be stemmed to the barest minimum, the abundant human resources that are abandoned in the rural areas can therefore be positively harnessed in order to make essential input into rural and urban housing construction.

Based on the findings, the following recommendations were made:

1. Encourage the use of local manufactured materials for house construction will promote self-reliance thereby conserving foreign exchange;
2. Remove complicated bottleneck associated with mortgage finance through financial incentives for Private Sector Loan Schemes of low interest rates and other attractive and tax reduction finance investment incentives.;
3. Formulation and Enforcement of tenancy agreement that outlines the modality of rental market operation is necessary in the emerging property market;
4. Furthermore, the approval of building plan and issuance of certificate of occupancy should be made faster and less cumbersome to encourage the increase in accommodation, thereby reducing pressure on the available ones and making them affordable;
5. Above all, direct government provision of housing is required to enhance sustainable housing provision in the study area, to provide for the needs of the low income and disadvantaged groups.

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SOIL PH MEASUREMENT IN THE URBAN ENVIRONMENT OF BISTRIȚA: A CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

Abstract. In the context of accelerated urbanisation and increasing environmental pressures, monitoring soil quality becomes essential to promote sustainable development. This study investigates soil pH variations in the urban and peri-urban areas of Bistrița (Unirea, Slătinița, Ghinda, Viișoara, Sigmir) to assess the impact of anthropogenic activities on soil balance and to identify potential risks to the health of urban ecosystems. The methodology included systematic sampling of soil from several representative locations, followed by pH value analysis using field survey methods, employing a pH meter. The results showed significant differences between central, industrial, residential, and peri-urban zones, indicating moderate acidification near pollution sources and a trend towards neutrality in urban green spaces and peripheral areas. These findings underscore the need for urban management policies that include regular soil monitoring and the integration of edaphic data into spatial planning. In conclusion, measuring soil pH in urban and peri-urban environments provides a valuable indicator for sustainability assessment, supporting strategic decisions that promote a healthier and more balanced urban ecosystem.

Keywords: soil pH measurement, urban and peri-urban areas of Bistrița, sustainable development

1. Introduction

Soil is increasingly recognised as an important non-renewable asset that must be properly managed and cared for. It is not only a vital carrier of

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biodiversity but also supports essential human needs such as food, clean water, and air. Soil fertility is defined as the capacity of soil to provide a suitable habitat for plants and to support the growth of crops (Edwin & Muthu, 2021).

Accelerated urbanisation and intensified anthropogenic activities have exerted significant pressure on soil quality, particularly in urban and peri-urban areas, where the edaphic balance is often disturbed. Among the key indicators of soil health, pH plays a central role, influencing nutrient availability, microbial activity, and the dynamics of heavy metals in soil (Rengel, 2011).

Cities and urban processes have had dramatic, yet varying, impacts on soil physical and biochemical properties and pollutant loads, all of which affect the life-supporting functions of soils (Marcotullio *et al.*, 2008). In the context of climate change and unsustainable urban development, monitoring soil pH becomes crucial for maintaining ecosystem functions and informing sustainable spatial planning decisions (Liu *et al.*, 2025).

Although the literature has emphasised the importance of pH in assessing soil fertility and buffering capacity (Zhang *et al.*, 2019), there are still gaps in studies applied to urban environments in specific geographical regions, such as Bistrița.

In the municipality of Bistrița, soil types differ from those in the peri-urban area, mainly due to the degree of urbanisation, anthropogenic intervention, and local natural characteristics.

Soils within the municipality of Bistrița:

Loamy or loamy-clay soils – predominant in residential and green areas (e.g., in front of apartment blocks), with good water retention capacity.

Acid brown soils – mainly found in less urbanised areas or parks.

Soils affected by urbanisation – compacted, poorly drained, often containing fill materials (rubble, gravel, construction debris).

Urban fill alters not only the texture but also the chemical properties of the soil (pH, heavy metal content, etc.).

Soils in the peri-urban area:

Reddish-brown and acid-brown soils – typical of hilly areas, formed on clayey or loamy substrates. These soils, being less affected by urbanisation, tend to have higher natural fertility.

These soil types directly influence the ecological regeneration capacity of cities and the potential for sustainable development, particularly in terms of green space management, urban agriculture, and green infrastructure (ICPA Soil Maps).

Functionally resilient urban soils play a pivotal role in mitigating the urban heat island effect, enhancing pollutant filtration, and facilitating carbon sequestration, thereby supporting climate regulation and ecological stability within metropolitan environments. They are essential for achieving the Sustainable Development Goals (SDGs), particularly SDG 11 – Sustainable Cities and Communities (Grigorescu *et al.*, 2019).

Moreover, the Bistrița urban system, characterised by a network of interconnected settlements and complex urban dynamics, provides an ideal framework for integrated analysis of soil as a strategic resource in sustainable spatial planning (Pop, 2016).

Studies show that pH analysis methods can yield different results depending on the extractant used, highlighting the need for standardisation to enable relevant comparisons between cities (Kalra, 1995). Moreover, urban vegetation – particularly the composition of tree species – exerts a significant influence on soil pH dynamics, with coniferous species generally contributing to increased soil acidification compared to deciduous species (Broschat, 2010).

Soil reaction, or pH (hydrogen potential), depends on the ratio between the concentration of H^+ and OH^- ions in the soil. A pH of 7 indicates neutrality; values below 7 indicate acidity, while those above 7 indicate alkalinity (agrobiznes.ro).

This paper aims to investigate the spatial distribution of soil pH in this emerging urban area, providing a scientific basis for sustainable development policies. The main conclusions highlight significant variations in pH depending on land use and emphasise the need to integrate edaphic data into ecological urban planning strategies.

2. Methodology

The information utilised in this study was extracted from pedological databases and maps available on the official website (icpa.ro) of the Research Institute for Soil Science and Agrochemistry (ICPA).

To ensure methodological coherence, the data were structured into the following subchapters:

A. Technical Specifications and Data Sources

Soil pH values were determined using a PH-98211 portable soil tester (Figure 1), with the following specifications:

- Device: PH-98211 soil tester
- Measurement range: 0.00–14.00 pH
- Resolution: 0.01 pH
- Accuracy: ±0.1 pH
- Dimensions: approx. 250 × 50 × 28 mm (supplied with calibration liquid)
- Display: 4-digit bright LCD
- Sensor type: conical crystal electrode

The use of a conical crystal pH electrode is scientifically validated for direct soil measurements, particularly in compact or semi-solid substrates. These probes are specifically designed for field applications, allowing accurate readings without the need for solution extraction. Automatic temperature compensation is essential to ensure measurement precision under variable environmental conditions.

Figure 1. Using the pH meter measuring set in the field
Source: Alexandru Marius Tătar

Experimental data were processed using MATLAB software, which enabled:

- Filtering and validation of recorded values
- Statistical computation of means and standard deviations
- Graphical representation of pH distribution by location and depth
- Correlation analysis with other relevant parameters (e.g., moisture content, soil type)

Before each measurement session, the device was calibrated at two reference points (pH 4.01 and pH 7.00) using standard buffer solutions, following the manufacturer's protocol. Field measurements were conducted under controlled conditions to minimise external variability (e.g., temperature, atmospheric humidity).

B. Soil Sampling Methodology for pH Determination

The study was conducted in the urban and peri-urban areas of Bistrița, located in Bistrița-Năsăud County, northern Romania. Sampling was carried out in four representative land-use categories: residential, parks, riverside, and industrial zones. Within each category, locations were selected based on accessibility and pedological representativeness.

Investigated areas

Residential zones: gardens, courtyards, and green spaces between apartment blocks. In peri-urban residential areas, samples were collected from the front yards of individual houses, including semi-managed green spaces. These sites were chosen for their moderate anthropogenic impact and relevance to domestic land use, offering a representative perspective on peri-urban soil quality.

- Parks: public green spaces with maintained vegetation.
- Riverside zones: banks and areas adjacent to watercourses.
- Industrial zones: active or abandoned industrial platforms.

Table 1

Depth of Soil pH Measurement in the Urban Area

Area type	Depth measured	Observations
Residential	10 cm	The layer is affected by human activities.
Parks	15 cm	Biologically active layer.
Near the river	10cm, 20cm, 30 cm	To capture pH variations in the alluvial profile, samples are taken at 10-20 cm and 20-30 cm for stratified analysis. Water-influenced alluvial soils
Industrial	10 cm	Surface layer exposed to contaminants.

Source: Alexandru Marius Tătar

Measurement depth varied by zone (Table 1). For each sample, the electrode was inserted into moist soil and left for 2–3 minutes to stabilise the pH reading. In compacted soils, a small amount of distilled water was added to ensure proper contact with the sensor.

Calibration and maintenance procedures included:

- Calibration before each measurement session
- Cleaning the electrode with distilled water after each use to prevent cross-contamination

Sampling period: April–May. This timeframe was selected for the following reasons:

- Post-winter biological activation: Soil begins to warm, enhancing microbial and chemical activity, thus offering a realistic snapshot of plant growth conditions.
- Optimal moisture levels: Spring soils typically exhibit balanced moisture, improving pH measurement accuracy.
- Urban redevelopment season: April–May coincides with gardening and green space maintenance, making pH data relevant for plant selection and soil treatment.
- Reduced external interference: March soils may be affected by de-icing salts, while June introduces variables such as fertilisation and irrigation. April–May offers a neutral window for reliable measurements.

The April–May period was selected as optimal for field measurements due to reduced external interferences. In March, soil conditions may be altered by residual de-icing salts from winter road maintenance, while in June, fertilisation and irrigation practices can significantly affect soil chemistry. Thus, April–May offers a more neutral and stable window for assessing soil pH under minimally disturbed conditions.

3. Results and discussion

In the residential area of Bistrița, soil pH levels were analysed based on a structured sampling strategy. The city was divided into five sectors: north, south, east, west, and centre. Two representative streets were selected from each sector.

Measurement points were chosen according to soil type, vegetation cover, and anthropogenic activity (e.g., green areas, private yards, wastelands).

A total of 10 measurement points per sector provided a representative overview of pH variation across the city (Figure 2).

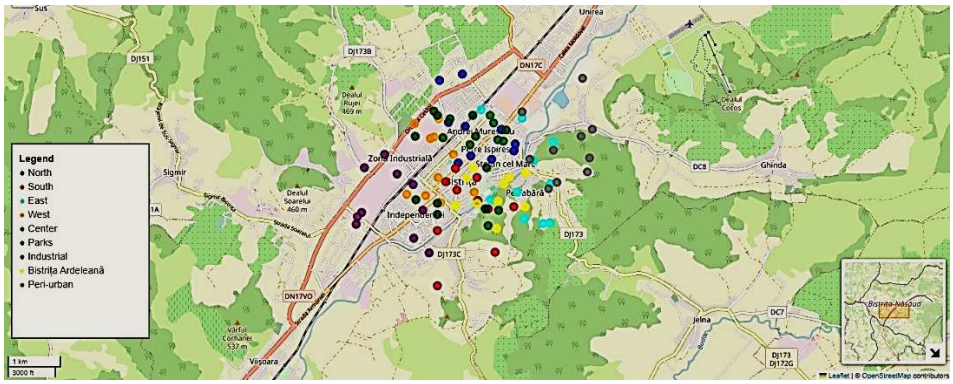

Figure 2. Bistrița soil sampling map
Source: Alexandru Marius Tătar, OpenStreetMap

The southern sector of Bistrița is more urbanised and better integrated into the public transport and sustainable mobility infrastructure, which may influence the quality and distribution of public services, including water supply and sewage systems (Figure 3).

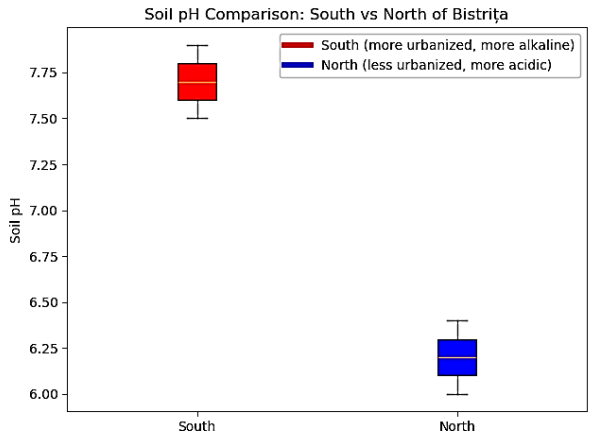

Figure 3. pH values in the North and South residential areas
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

More intense urbanisation in the southern part of Bistrița contributes to a more alkaline soil profile compared to the northern sector. Several factors may explain this:

a. **Influence of construction materials and urban infrastructure**. Urban soils are often affected by alkaline substances such as concrete, cement, and lime, which can elevate pH levels over time. Runoff water from impervious surfaces may transport these materials into the soil profile.
b. **Anthropogenic activities**. In the southern sector, characterised by increased economic and industrial activity (e.g., Bistrița Sud Industrial Park), chemical spills or seepage may alter soil chemistry. Additionally, the frequent application of alkaline amendments (e.g., lime, limestone) in urban gardens and green spaces can contribute to elevated pH levels.

The observed differences in soil alkalinity between the western and eastern sectors of Bistrița can be attributed to a combination of natural and anthropogenic factors (Figure 4). In the West, land is more intensively used for construction, light industry, and urban gardening, where alkaline fertilisers are commonly applied.

In contrast, the eastern sector is dominated by green and agricultural areas, where soil tends to be more acidic due to organic matter decomposition and nitrogen-based fertilisation.

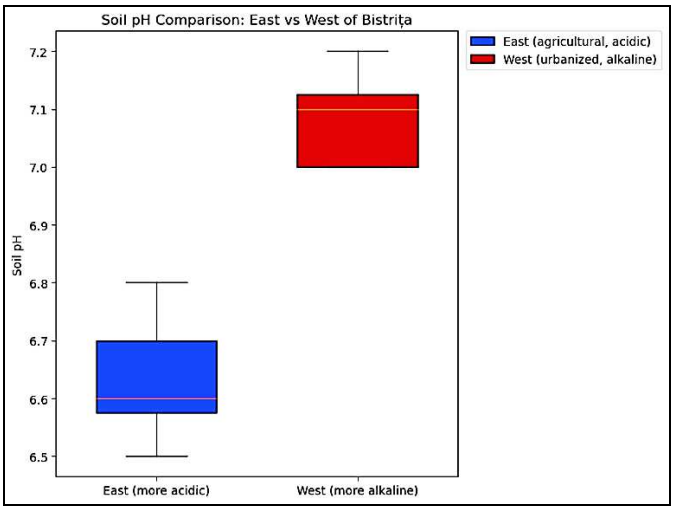

Figure 4. pH values in the East and West residential areas
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

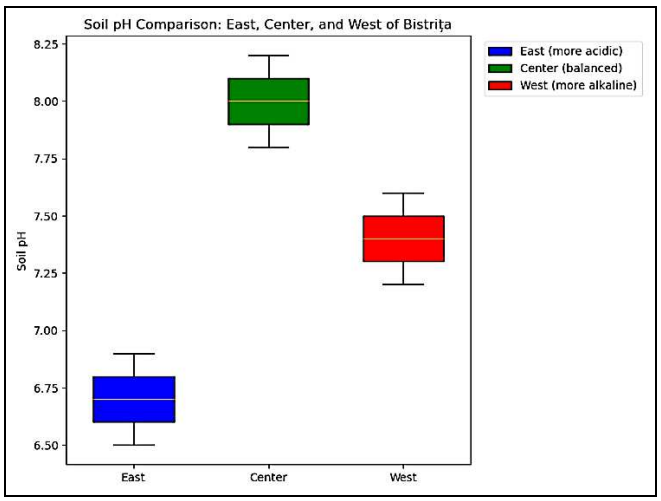

Figure 5. pH values in the Centre residential areas
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

Soils in the central area of Bistrița exhibit slightly alkaline characteristics, reflecting a balance between controlled urban interventions and limited industrial exposure. The centre is less acidic than the east and less influenced by industrial activities than the west (Figure 5).

Scientific Interpretation of Image Data

Group 1: Slătinița and Ghinda

- Median pH ≈ 5.8
- Interquartile Range (IQR): ~5.7–5.9
- Total Range: ~5.6–5.9+

→ Indicates a more acidic soil profile with slightly higher variability.

Group 2: Unirea, Viișoara, and Sigmir

- Median pH ≈ 6.0
- IQR: ~6.0–6.1+
- Total Range: ~5.9+–6.1+

→ Indicates soils closer to neutral, with a more compact distribution.

These differences may reflect variations in land use, soil type, and anthropogenic influence across the peri-urban landscape (Figure 6).

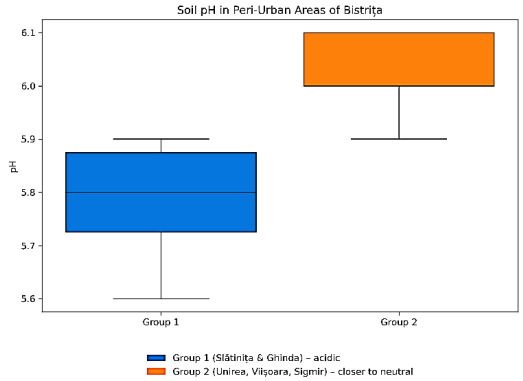

Figure 6. pH values in peri-urban residential areas
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

Soil pH in Urban Green Spaces

To assess soil pH in urban green spaces, two representative parks were selected: King Michael I Park and Avram Iancu Park No. 9. For each park, two soil samples were collected:

- One from the grass-covered area
- One from the shrub-covered area (Figure 7).

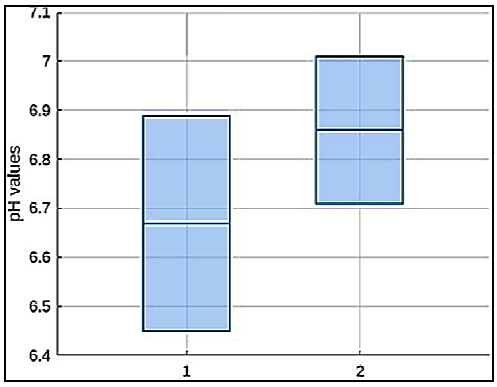

Figure 7. pH values in the green area of the city (park)
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

pH Values:

- Zone 1: pH ranges from ~6.5 to 6.9, median ≈ 6.7
- Zone 2: pH ranges from ~6.6 to nearly 7.0, median ≈ 6.8–6.9

The soils in both zones are weakly acidic to neutral, typical of well-maintained urban green spaces. Small differences between the two areas suggest uniformity in soil management practices (e.g., irrigation, fertilisation, vegetation type). Values close to pH 7 indicate favourable conditions for urban vegetation such as lawns and ornamental trees.

Both zones have an IQR of approximately 0.4, indicating moderate dispersion and uniform soil quality:

- Zone 1: Q1 ≈ 6.5; Q3 ≈ 6.9 → IQR = 0.4
- Zone 2: Q1 ≈ 6.6; Q3 ≈ 7.0 → IQR = 0.4

Soil pH Variation Near the Bistrița Ardeleană River

Soil pH variation near the Bistrița Ardeleană river was assessed at depths of 10 cm, 20 cm, and 30 cm, based on the typical behaviour of alluvial and hydromorphic soils (Table 2).

Table 2

Soil Characteristics According to Depth

Depth	Characteristics	Trend pH
10 cm	Surface layer, influenced by organic matter, fertilisation, and rainfall	Slightly acidic or neutral pH
20 cm	Middle layer, more stable, less influenced by external factors	Relative pH constant
30 cm	Lower layer, possibly with salt or mineral accumulations	pH slightly more alkaline or constant

Source: Alexandru Marius Tătar

The characteristics of urban soil near the river can be categorised into two main groups:

a. Anthropogenic Influences:

- Potential contamination from urban pollutants (e.g., heavy metals, hydrocarbons, waste)
- pH alterations due to sewage discharge or construction materials

b. Altered Stratification:

- Soil mixing and compaction in urbanised areas may disrupt natural pH gradients

pH Variation by Depth:

- 10 cm depth – Surface pollution influence
- pH decrease: ±0.3 to ±0.8 units

Causes: industrial dust, vehicle emissions, rainwater runoff, household waste

- 20 cm depth – Seepage and structural changes
- pH variation: ±0.2 to ±0.5 units

Causes: infiltration of contaminated water, reduced biological activity due to compaction

- 30 cm depth – Lower urban influence

Slight pH increases possible due to buried construction materials (e.g., concrete, limestone) (Figure 8).

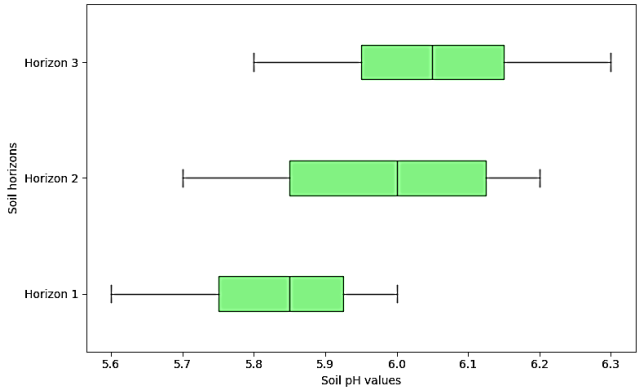

Figure 8. pH values in the Bistrița Ardeleană river area
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

Soil pH in the Industrial Area of Bistrița

Soils in the industrial area are influenced by both natural characteristics and historical/current industrial activities (Figure 9).
Identified Soil Types:

- Modified urban soils containing construction debris, slag, and heavy metals
- Acid brown soils or degraded chernozems, depending on location and industrial legacy

Sampling Methodology:

- Four locations were selected, with two representative samples per site
- Areas with visible construction debris or landfills were avoided to ensure data reliability

Results:

- pH values ranged from 6.1 to 6.5, indicating weakly acidic conditions
- This range is compatible with biological activity and suggests potential for soil reclamation
- Soils are not severely polluted and may be restored for agricultural, ecological, or industrial use with minimal corrective measures

All four locations exhibited an IQR of approximately 0.20, indicating low dispersion and consistent soil conditions. This uniformity may reflect similar substrate characteristics, pollution sources, and measurement methodology.

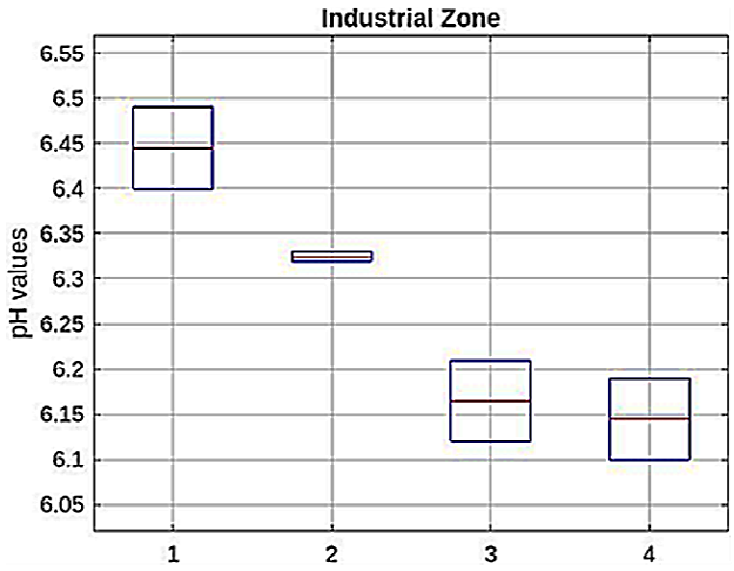

Figure 9. pH values in the Industrial zone
Source: Alexandru Marius Tătar, realised in https://matlab.mathworks.com/

According to Rengel (2011), soil pH is not only a determinant of nutrient solubility and uptake but also a key indicator of soil resilience and functionality under stress conditions.

1. Soil pH: Ecological and Agronomic Significance

The scientific literature emphasises that soil pH directly influences both biochemical and physico-chemical processes within the soil matrix. Acidic soils may limit the uptake of essential nutrients such as phosphorus, calcium, and magnesium, while alkaline soils may promote the accumulation and reduced mobility of certain toxic heavy metals.

In urban environments, pH variations can reflect a combination of natural factors and anthropogenic activities, thereby serving as an indirect indicator of environmental quality and soil health.

2. Urban Soil: Characteristics and Challenges

Urban soils are typically heterogeneous, structurally and chemically altered, and often exhibit high levels of compaction and contamination. Recent studies (e.g., Lehmann & Stahr, 2007; Pouyat *et al.*, 2010) demonstrate that urban soils exhibit substantial variability in pH, influenced by factors such as land use patterns, proximity to pollution sources, and the historical evolution of urban infrastructure.

In Romania, research on urban soils remains limited, particularly in small and medium-sized cities such as Bistrița. This gap underscores the need for applied studies that address urban soil dynamics in diverse geographical contexts. Urban development cannot be considered in isolation, but must be understood in the context of complex territorial relationships with rural areas, including soil characteristics, infrastructure and public services (Grigorescu *et al.*, 2019)

3. pH Measurement as a Tool for Sustainable Development

In the framework of the 2030 Agenda for Sustainable Development (UN SDGs), monitoring soil quality is essential for achieving objectives related to environmental health, urban agriculture, and responsible spatial planning (sdgs.un.org).

Soil pH measurements can:

- Identify areas at environmental risk;
- Inform ecological restoration and land management decisions;
- Support community awareness regarding the impact of human activities on soil and ecosystem health.

The results obtained from soil pH measurements in the urban environment of Bistrița reveal significant variability across different sectors of the city. These variations correlate with land use patterns and proximity to pollution sources. The findings are consistent with previous research (Lehmann & Stahr, 2007; Pouyat *et al.*, 2010), which emphasises the influence of anthropogenic pressures on urban soil quality.

4. Conclusion

The main contribution of this study is the provision of updated local data within a national context where research on urban soils remains limited. The findings underscore the importance of measuring soil pH in urban areas of the Bistrița urban system, highlighting the role of this indicator in assessing environmental quality and informing sustainable development strategies.

The results revealed significant variability in pH values, depending on the degree of urbanisation, land use type, and anthropogenic influences. These findings confirm the necessity of continuous and systematic monitoring of this parameter. Soil pH measurement is not merely a technical procedure, but a critical component in the decision-making process for urban sustainability. By integrating such data into public policy and interdisciplinary research, a robust framework can be established for greener, healthier, and more resilient cities.

Public Policy Recommendations for Sustainable Urban Soil Management:

- Implement an urban soil monitoring system with fixed sampling points and regular analysis of pH and other relevant parameters (e.g., heavy metal content, organic matter, salinity).
- Integrate soil quality data into general urban development plans (PUG) and local development strategies to prevent construction in areas with degraded or unstable soils.

Directions for Future Research:

- Extend the analysis to the regional level to compare the Bistrița urban system with other cities across Romania to identify common patterns or significant differences in soil pH.
- Develop predictive models using artificial intelligence and GIS to forecast pH changes under scenarios of urbanisation, climate change, or anthropogenic interventions.

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RESIDENTS' PERCEPTION OF GREEN INFRASTRUCTURE DELIVERY IN SOUTHWESTERN NIGERIA

Abstract. This study aimed at examined residents' perception of green infrastructure delivery in Abeokuta, Osogbo and Ado-Ekiti in Southwester Nigeria. Data for the study were from primary and secondary sources. Primary data were collected through physical observation and questionnaires applied to residents. Using multistage sampling, Abeokuta, Osogbo and Ado-Ekiti were stratified into three developmental zones (core, transition and suburban) followed by identification of residential areas in the zones. Thus, 199, 179 and 115 residential buildings were sampled across the developmental zones of Abeokuta, Osogbo and Ado-Ekiti respectively where respondents were selected to arrive at 493 residents that formed the sample size for the study. Data collected were analysed using both descriptive and inferential statistics. Findings (58.3% of the residents) revealed that the government was the major provider of green infrastructure in the three cities and the condition of green infrastructure was just fair with Relative Condition Index (RCI) of 2.63 and the RCI varied across the cities. It was also discovered that residents made use of green infrastructure for different purposes across the cities. Findings further revealed that the residents' places high level of importance on green infrastructure with Relative Importance Index (RII) of 3.06, but the level of satisfaction they derived was low with Relative Satisfaction Index (RSI) of 2.93 with lower RSI attributable to several green infrastructures. The factors found to influence residents' perception were socioeconomic characteristics (R^2 = 0.299) and condition of green infrastructure (R^2 = 0.072). This study concluded that there was less residents' level of satisfaction with green infrastructure compared with the level of importance they attached to them. Moreover, the residents' perception of green infrastructure was influenced by their socioeconomic characteristics and condition of green infrastructure in the study area.

Keywords: green infrastructure, delivery, residents, Southwestern Nigeria

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1. Introduction

Across the world, there are indications that despite the vital roles played by green infrastructure in offering social, cultural and economic developments of individuals and communities, the problem of ineffective green infrastructure delivery is escalating. Majority of citizens in countries in Sub-Saharan Africa, particularly Nigeria, do not have access to green infrastructure and where available, they are either not functioning or in a terrible state (Jim & Chem, 2008; Popoola *et al.*, 2016; Dipeolu & Ibem, 2020). As a result, many urban dwellers in the country live in deteriorating conditions that constitute an affront to human dignity. These conditions come with attendant health and environmental implications such as increased flooding, higher wind speeds and more episodic rainfall especially in higher-density cities where green infrastructure are usually scarce (Coutts *et al.* 2014; Brown *et al.* 2015). This realization of green infrastructure efficacy has heightened scholarly inquiry in relation to state and accessibility especially in the Southwestern zone of the Nigeria.

Studies have investigated the state of green infrastructure in both developed and developing countries (European Environment Agency [EEA], 2002; Oh & Jeong, 2007; Cook *et al.*, 2012; Ma & Haarhoff, 2015; Popoola *et al.* 2016; Artmann *et al.*, 2017; Johns, 2019; Yoade, 2019). Ma and Haarhoff (2015) examined accessibility levels of green infrastructure in walking distance in Auckland, New Zealand. One of the crucial findings was that residents/households in low-income areas do not have access to green infrastructure such as parks and public gardens, green corridors, local natural reserves, and beaches, with amenities such as playground, exercise equipment and social gathering sites. Likewise, Popoola *et al.* (2016) indicated that access to adequate green infrastructure is premised on the financial capability of a person or individuals. The study further stressed that the state of green infrastructure in Nigeria is attributed to incessant economic and political crises, rapid urbanization, inefficient infrastructural delivery systems, low investment in green infrastructure and bad governance. As much as these studies focused on accessibility and state of green infrastructure, there is dearth of information on government policies towards green infrastructure delivery.

Valderrama (2012) observed that almost all the green infrastructure such as woods, wetlands, parks, gardens, and man-made greenery design solutions such as constructed wetlands and green roofs in New Jersey, United States are owned by private investors and are in pleasant condition. On the other hand, Molla *et al.* (2017) stated that the deplorable condition of some green infrastructure in Ethiopia is attributed to the fact that some of them belong to government. The study recommended that government should ensure synergy and partnership with private providers on the maintenance of green infrastructure (Sister *et al*., 2010). As a result, this study therefore assessed the providers of green infrastructure in the study area.

Studies have also examined the condition of green infrastructure and residents' socioeconomic attributes in relation to perception of green infrastructure delivery (Egunjobi, 1989; Jim & Chen, 2008; Wright, 2011; Wu *et al*, 2019). The work of Jim and Chen (2008) established that age, gender, education and income have significant influence on the physical activity of residents and use of urban parks in Guangzhou, China. Also, Wright (2011) assessed the perceptions and use of urban green infrastructure in two Ethiopian cities. The study concluded that location, accessibility, safety, type of green infrastructure, and opportunities for social activities, and residents' socio-economic factors such as age, gender and income influenced residents' perception of green infrastructure in the two cities. This study also examined the condition of green infrastructure and the socio-economic characteristics of residents in the study area and how these influence residents' perception to green infrastructure delivery in the study area.

There are several studies on perception of green infrastructure in terms of their awareness, importance attached to them and satisfaction derived from their utilization (Whitford *et al*., 2001; Wojuade, 2012; Nickel, *et al*., 2014; Okoli, 2014; Ezema, *et al*., 2015; Keeley *et al*., 2015; Lennon, 2015). Turner *et al.* (2016) indicated that residents' awareness of green infrastructure not only provides recreational and social interaction to people but also enhance their quality of life. Furthermore, studies have established the importance attached to green infrastructure in terms of their contribution to human health, well-being, quality of life and reduction of environmental impacts (van den Berg *et al.* 2010; Mayer *et al*., 2012; Lovell & Taylor, 2013; Meerow & Newell, 2017; Atoyebi & Yoade, 2024). The studies concluded that greener neighbourhoods are predominantly important for increasing people's engagement in physical activity.

Literatures have ascertained that the level of satisfaction derived is a determinant of residents' perception of green infrastructure (Geis, 2000; Lovejoy *et al.*, 2010; Johnson *et al.*, 2014; Popoola *et al.* 2016; Ostoić *et al.* 2017; Harrington & Hsu, 2018; Gashu *et al.* 2019). Satisfaction to green infrastructure can be assessed based on the availability of green spaces in any environment, travel time to available green spaces in home or work space, management and maintenance of green spaces and the behavioral approach of the users of green spaces. These studies are in developed countries where planning for green urban infrastructure and its utilization have been in existence for centuries. Thus, their perception of green infrastructure might be different from what operates in Nigeria. This study also examined residents' perception of green infrastructure in terms of the level of awareness of, importance attached to and satisfaction derived from green infrastructure in the study area.

From the foregoing, this study assessed green infrastructure delivery in term of the perception of residents on the provision and utilization of green infrastructure in the cities of Abeokuta, Osogbo and Ado-Ekiti in Southwestern Nigeria.

2. Study area

The study area covers three major cities in the Southwest region of Nigeria. The Southwest region comprises six states (Lagos, Ogun, Oyo, Osun, Ondo and Ekiti) and one hundred and thirty-seven (137) local governments. It is located in the southern part of the country and shares boundary with Kwara and Kogi States in the north, Edo State in the East, Republic of Benin in the West and bordered Atlantic Ocean in the South. Presented in the Figure 1 is the map of the Southwest with its adjoining boundaries. The region covered a land mass of 78,505.166 square kilometers and is the second most populous (27,511,992) region after Northwest (35,786,944) (NPC, 2006) and has large number of industries (Figure 1).

Figure 1. Southwestern States in the context of Nigeria
(Source: National Space Research and Development Agency - NASDRA, 2023*)*

The concentration of industrial and economic activities in the Southwest has attracted large number of people to the region. This situation has not only resulted to lateral and structural growth of most urban centers but also to urbanization and its associated problems such as environmental degradation and losses of urban green space which have taken unprecedented complex dimension in major cities in the

Southwest region of Nigeria. In line with this, Popoola et al. (2016) opined that continuously loss of green infrastructure is altering urban ecosystems, thus bringing about continuous change in the outlook of cities. Thus, it becomes imperative to investigate residents' perception of green infrastructure delivery in selected cities of the region. This study focuses Abeokuta, Osogbo and Ado Ekiti, Nigeria (Figure 2).

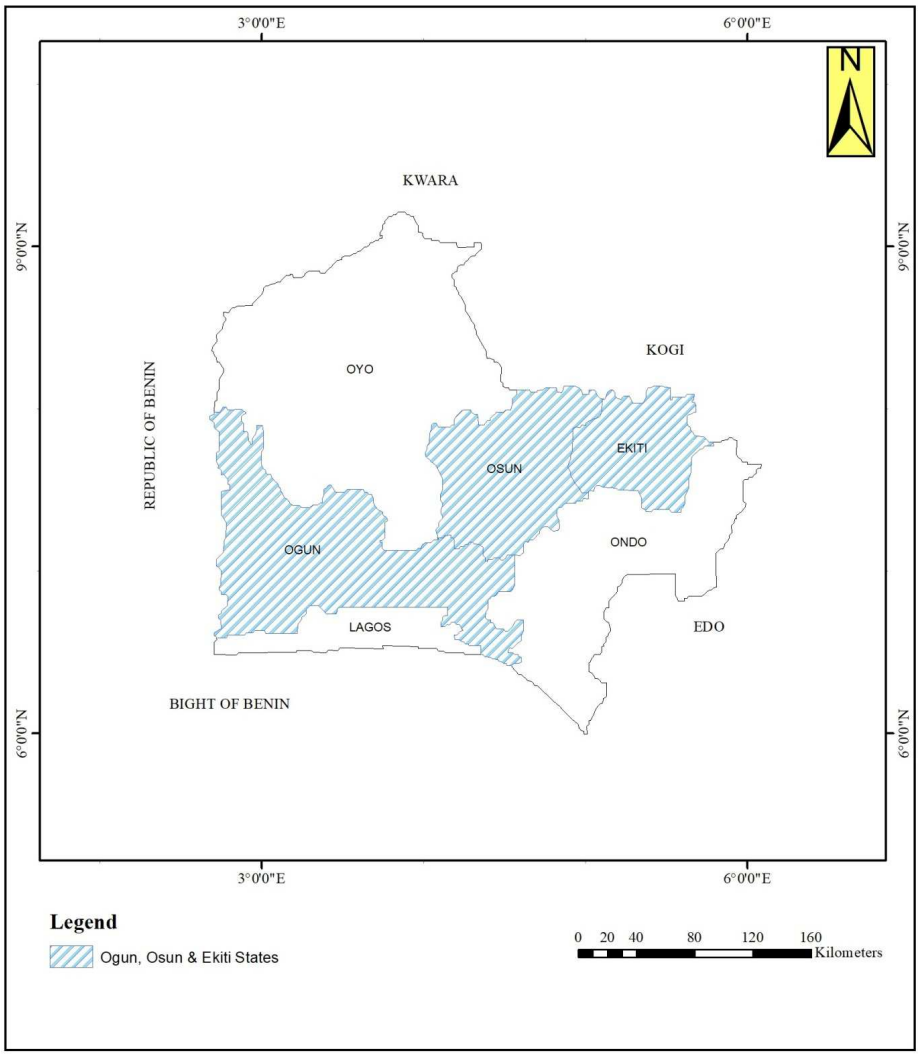

Figure 2. Ogun, Osun and Ekiti States in Southwest
(Source: National Space Research and Development Agency - NASDRA, 2023*)*

3. Methodology

For the study, data were collected from both primary and secondary sources. The primary data were data collected by researcher which are both quantitative and qualitative in nature while secondary data were those obtained from published works. The six states in the Southwestern zone were stratified into three groups: Lagos/Ogun; Oyo/Osun and Ondo/Ekiti. One state is selected randomly from each group to arrive at the three states selected for this study which are Ogun, Osun and Ekiti States.

The focus of this study is the state capitals. Thus, the state capitals of Ogun, Osun and Ekiti (Abeokuta, Osogbo and Ado-Ekiti) respectively are selected. The study population comprises all the residents of Abeokuta, Osogbo and Ado-Ekiti, Nigeria. Multi-stage sampling procedure was adopted for this study. The first stage is the stratification of the selected cities into core, transition and suburban developmental zones.

The next stage involves the estimation of the streets in the selected developmental zones. Physical observation revealed that there were 340, 752 and 331 streets in the selected developmental zones of Abeokuta, Osogbo and Ado-Ekiti respectively. In Abeokuta, there were 107 streets in the core zone, 185 in transition and 42 in suburban zone. While Osogbo comprises of 142, 291 and 319 streets in the core, transition and suburban zones respectively; streets in the core, transition and suburban zones of Ekiti were 98, 181 and 52 respectively. Systematic sampling was adopted to select one (1) of every five (5) streets in each development zones. This represents 20% of the streets.

Systematic techniques were used in the selection of buildings. Consequently, one (1) of every twenty (20) buildings in the selected streets of Abeokuta, Osogbo and Ado-Ekiti were sampled. Respondents for questionnaire survey were drawn from 5% of the residential buildings. The first building was chosen randomly, while the subsequent unit of investigation was on every twentieth (20th) building in each residential quarter. The number of buildings in the selected developmental zones and the number representing the sample size (5%). Thus, the sample size was 493 residents that were drawn from the three cities. Data collected were analysed using both the descriptive and inferential statistics based on the objectives.

4. Residents' perception of green infrastructure delivery in Abeokuta, Osogbo and Ado-Ekiti

4.1. Level of Importance Attached to Green Infrastructure

Findings on the level of importance that residents attached to green infrastructure in the study area are as discussed in following sections. For the sake of easy understanding of the interpretation of these findings, the results for each of the cities were presented separately. Also, there is a combined presentation of findings for the three cities together as a study area.

4.2. Level of importance attached to green infrastructure in Abeokuta

Assessment of respondents on the level of importance attached to green infrastructure of residential neighbourhoods of Abeokuta are as presented in Table 1 based on mean index computation. The Sum of Weighted Value (SWV) for each of the green infrastructure was calculated based on the number of respondents (199) and the mean index for each of the green infrastructure which is tagged Relative Importance Index (RII). The cumulative mean (CM) of RII for all the assessed green infrastructure in Abeokuta was 3.18 and the green infrastructure that the resident attached high level importance to those above 3.18 with positive deviations about the mean (DMs). On the other hand, are those green infrastructures below 3.18 RII and negative deviations about the mean (DMs) which residents attached less importance to, based on their experiences.

Table 1

Level of Importance Attached to Green Infrastructure in Abeokuta

Green infrastructure	Abeokuta			
	SWV	**Mean**	**DM**	**Rank**
Green parks	565.16	2.84	-0.34	16
City crop farms (urban agriculture)	624.86	3.14	-0.04	13
Grasses	825.85	4.15	0.97	2
Sport Fields	788.04	3.96	0.78	3
Green roofs	628.84	3.16	-0.02	8
Green gardens	736.30	3.70	0.52	6
Urban forests	622.87	3.13	-0.05	14
Street trees	829.83	4.17	0.99	1
Public green space	644.76	3.24	0.06	7
Horticulture	612.92	3.08	-0.10	15
Woodland	754.21	3.79	0.61	4
Flood plains/wetland	551.23	2.77	-0.41	17
Blue roof	626.85	3.15	-0.03	11
School yard	628.84	3.16	-0.02	8
Rain gardens	541.28	2.72	-0.46	20
Wildlife habitat	754.21	3.79	0.61	4
Outdoor sport fields	551.23	2.77	-0.41	17
City Square and plazas	626.85	3.15	-0.03	11
Home garden (home yards)	628.84	3.16	-0.02	8
Cemetery and religious yards	551.23	2.77	-0.41	17
RII		**3.18**		

Source: Field Survey, March and April, 2024

As presented in Table 1, the green infrastructure that the residents attached high level of importance to and return positive deviations from the mean (DMs) were ranked. Street trees system (DM = 0.99) was ranked first, grasses (DM = 0.97) was ranked second, and sports fields collection (DM = 0.78) was ranked third. Green infrastructure such as woodland and wildlife habitat with common DM of 0.61 are ranked fourth and there are some other types of green infrastructure in in the positive category such green gardens and public green spaces with DMs of 0.52 and 0.06, which are ranked 6th and 7th respectively. It is noteworthy to state that these seven green infrastructures are those that the respondents attached high level of importance to. Also, the level of importance that the residents of Abeokuta attached to green infrastructure is also revealed

with high indices that are more than RPI of 2.5 on a five-point scale. The green infrastructure with negative deviations about their mean in Abeokuta also has more than the average index of 2.5 of the five-point scale. Findings also revealed that despite the negative deviations, all the green infrastructure also have the indices of more than 2.5 for the level of importance that residents attached to them.

The implication of these findings is that the respondents considered some green infrastructure more important than others. As such, it can be deduced that the residents were able to rate the importance of green infrastructure in their areas. These revealed that the residents of Abeokuta desired an environment that satisfies the goal of urban planning and that is to secure an environment that serene and conducive for living, working and recreation.

4.3. Level of importance attached to green infrastructure in Osogbo

Assessment of respondents on the level of importance attached to green infrastructure of residential neighbourhoods of Osogbo are as presented in Table 2 based on mean index computation. The Sum of Weighted Value (SWV) for each of the green infrastructure was calculated based on the number of cases (179) and the mean index for each of the green infrastructure. The RII for all the assessed green infrastructure in Osogbo was 3.07 and the green infrastructure that the resident attached high level importance with are those above 3.07 and had positive deviations about the mean (DMs). On the other hand, are the green infrastructure which their indices are below the RII of 3.07 have negative deviations about the mean (DMs). They are the green infrastructure that the residents attach less importance based on their experiences. The ranking of these 20 green infrastructures in order of their mean indices is also included.

Table 2

Level of Importance Attached to Green Infrastructure in Osogbo

Green infrastructure	Osogbo			
	SWV	Mean	DM	Rank
Green parks	508.36	2.84	-0.23	16
City crop farms (urban agriculture)	562.06	3.14	0.07	13
Grasses	742.85	4.15	1.08	2
Sport Fields	708.84	3.96	0.89	3
Green roofs	565.64	3.16	0.09	8
Green gardens	662.30	3.70	0.63	6
Urban forests	560.27	3.13	0.06	14
Street trees	746.43	4.17	1.10	1
Public green space	579.96	3.24	0.17	7
Horticulture	551.32	3.08	0.01	15
Woodland	678.41	3.79	0.72	4
Flood plains/wetland	495.83	2.77	-0.30	17
Blue roof	563.85	3.15	0.08	11
School yard	565.64	3.16	0.09	8
Rain gardens	486.88	2.72	-0.35	20
Wildlife habitat	678.41	3.79	0.72	4
Outdoor sport fields	495.83	2.77	-0.30	17
City Square and plazas	563.85	3.15	0.08	11
Home garden (home yards)	565.64	3.16	0.09	8
Cemetery and religious yards	495.83	2.77	-0.30	17
RII		**3.07**		

Source: Field Survey, March and April, 2024

The green infrastructure that the residents attached highest level of importance to and return positive deviations from the mean (DMs) in Osogbo was street trees with DM = 1.10 and ranked first. Also, grasses constituting green infrastructure (DM= 1.08) was ranked second and sports field (DM = 0.89) was third in rank. Green infrastructure such as availability of woodland and wildlife habitat with common DM of 0.72 are ranked 5th. Added to these are other green infrastructures in the positive category such as blue roofs, school yards, city square and plazas, among others. It can be inferred that these types of green infrastructure are those that the respondents attached high level of importance to and the level of importance is also revealed with high indices of more than average of 2.5 of the five-point scale.

The green infrastructures with negative deviations about their mean also have more than the RII of 2.5 of the five-point scale. These include green infrastructure such as green parks, flood plains, rain gardens, wildlife habitat, outdoor sports fields, and cemetery and religious yards. Also, from these findings, and despite the negative deviations, all the green infrastructure also has the indices of more than 2.5 for the level of importance that residents attached to them.

The implication of these findings is that the respondents considered this green infrastructure important for their living. As such, it can then be deduced that the residents knew the importance of green infrastructure in their residential neighbourhoods. They are concerned about the issues with environmental conservations, disaster mitigation, serenity of the environment and safety of the residents in their neighbourhoods. These revealed that the residents of Osogbo also desired an environment that satisfies the goal of urban planning and that is to secure an environment that conducive for living working and recreation.

4.4. Level of importance attached to green infrastructure in Ado-Ekiti

Assessment of respondents on the level of importance attached to green infrastructure of residential neighbourhoods of Ado-Ekiti are as presented in Table 3 based on mean index computation. The Sum of Weighted Value (SWV) for each of the green infrastructure was calculated based on the number of respondents (115) and the mean index for each of the green infrastructure. The cumulative mean (CM) of RII for all the assessed green infrastructure in Ado-Ekiti was 2.99 and the green infrastructure that the resident attached high level importance to, are those above 2.99 and with positive deviations about the mean (DMs). On the other hand, are those green infrastructures below 2.99 RII and negative deviations about the mean (DMs) which residents attached less importance to, based on their experiences.

Table 3

Level of Importance Attached to Green Infrastructure in Ado-Ekiti

Green infrastructure	Ado-Ekiti			
	SWV	**Mean**	**DM**	**Rank**
Green parks	323.15	2.81	-0.18	16
City crop farms (urban agriculture)	319.70	2.78	-0.21	17
Grasses	345.00	3.00	0.01	13
Sport Fields	319.70	2.78	-0.21	17
Green roofs	483.00	4.20	1.21	2
Green gardens	473.00	4.15	1.16	4
Urban forests	369.15	3.21	0.22	7
Street trees	483.00	4.20	1.21	2
Public green space	350.75	3.05	0.06	12
Horticulture	488.2	4.25	1.26	1
Woodland	361.10	3.14	0.15	7
Flood plains/wetland	356.50	3.10	0.11	9
Blue roof	425.50	3.70	0.71	5
School yard	310.50	2.70	-0.29	19
Rain gardens	334.65	2.91	-0.08	14
Wildlife habitat	356.50	3.10	0.11	9
Outdoor sport fields	425.50	3.70	0.71	5
City Square and plazas	310.50	2.70	-0.29	19
Home garden (home yards)	334.65	2.91	-0.08	14
Cemetery and religious yards	356.50	3.10	0.11	9
RII		**2.99**		

Source: Field Survey, March and April, 2024

As contained in Table, 3, green infrastructure that the residents attached high level of importance to and return positive deviations from the mean (DMs) were ranked. These are horticulture (DM = 1.26) which was ranked first, green roofs and street trees (DM = 1.21) which were ranked second, green gardens (DM = 1.16) were ranked fourth. Other green infrastructure such as urban forests and wood land with common DM of 0.72 were ranked 5th, among other green infrastructure that are in the positive category. Based on the results on the green infrastructure with positive deviation about the mean, it can be inferred that these green infrastructures are those that the respondents attached high level of importance to with indices of more than RPI of 2.5 of the five-point scale. However, when compared with the earlier two cities discussed,

these findings reveal that the residents of Ado-Ekiti did not attach high level of importance to many of these green infrastructures.

The green infrastructure with negative deviations about their mean also has more than the average index of 2.5 of the five-point scale. These include green infrastructure such as green parks, urban agriculture, sports fields, school yards, rain gardens, home gardens and city squares. It is noteworthy from these findings that despite the negative deviations, all the green infrastructure also has the indices of more than 2.5 for the level of importance that residents attached to them. The implication of these findings is that the respondents considered these green infrastructures important for their living, although in a less manner, especially when compared with the cases of Abeokuta and Osogbo. As such, it can be deduced that the residents knew the importance of green infrastructure in their residential neighbourhoods and desired an environment that satisfies the goal of urban planning and that is to secure an environment that conducive for living working and recreation.

4.5. Level of importance attached to green infrastructure in the Study Area

Assessment of respondents on the level of importance attached to green infrastructure in the three cities of Abeokuta, Osogbo and Ado-Ekiti are as presented in Table 4 based on mean index computation. The Sum of Weighted Value (SWV) for each of the green infrastructure was calculated based on the total number of respondents (493) and the mean index for each of the green infrastructure. The RII for all the assessed green infrastructure for the three cities was 3.06 and the green infrastructure that the residents attached high level of importance with are those above 3.06 and had positive deviations about the mean (DMs). On the other hand, are those green infrastructures below 3.06 RPI and negative deviations about the mean (DMs) which residents attached less importance to, based on their experiences.

Table 4

Level of Importance Attached to Green Infrastructure in the Study Area

Green infrastructure	Study Area			
	SWV	Mean	DM	Rank
Green parks	1,459.28	2.96	-0.10	16
City crop farms (urban agriculture)	1,493.79	3.03	-0.03	12
Grasses	2,070.60	4.20	1.14	2
Sport Fields	1,464.21	3.97	0.91	3
Green roofs	1,592.39	3.23	0.17	8
Green gardens	1,883.26	3.82	0.76	6
Urban forests	1,528.30	3.10	0.04	11
Street trees	2,085.39	4.23	1.17	1
Public green space	1,607.18	3.26	0.20	7
Horticulture	1,483.93	3.01	-0.05	13
Woodland	1,893.12	3.84	0.78	4
Flood plains/wetland	1,400.12	2.84	-0.22	17
Blue roof	1,474.07	2.99	-0.07	14
School yard	1,552.95	3.15	0.09	9
Rain gardens	1,893.12	3.84	0.78	4
Wildlife habitat	1,400.12	2.84	-0.22	17
Outdoor sport fields	1,474.07	2.99	-0.07	14
City Square and plazas	1,552.95	3.15	0.09	9
Home garden (home yards)	1,301.52	2.64	-0.42	20
Cemetery and religious yards	1,474.07	2.84	-0.22	17
RII		**3.06**		

Source: Field Survey, March and April, 2024

As contained in Table, 4, green infrastructure that the residents attached high level of importance to and return positive deviations from the mean (DMs) were ranked. Being an aggregation of the ranking of the green infrastructure across the three cities, the pattern of ranking of the green infrastructure follows those of the three cities earlier discussed. It can be inferred that these highly ranked green infrastructures are those that the respondents attached high level of importance to, based on their indices with positive deviations from the mean and more than average of 2.5 of the five-point scale. Some other green infrastructures with negative deviations about their mean also have more than the RPI of 2.5 of the five-point scale. Despite the negative deviations, all the green infrastructure also has the indices of more than 2.5 for the level of importance that residents attached to them.

The implication of these findings is that the respondents considered some green infrastructure more important than others, although they attached importance to the entire green infrastructure. As such, it can be deduced that the residents knew the importance of good environmental quality in their areas through the availability of green infrastructure. They are concerned about the issues with environmental conservations, disaster mitigation, serenity of the environment and safety of the residents in their neighbourhoods. These revealed that, generally, the residents of the three cities desired an environment that satisfies the goal of urban planning and that is to secure an environment that conducive for living, working and recreation, although with varying levels.

5. Conclusion and recommendations

This study focused on assessment of green infrastructure in Abeokuta, Osogbo and Ado-Ekiti. In achieving this, the socioeconomic characteristics of residents, providers, condition and utilization of green infrastructure, residents' perception of green infrastructure in terms of the level of importance that residents attached to green infrastructure and the level of satisfaction with green infrastructure, and factors influencing the perception of residents on green infrastructure in the study area were examined.

However, it is concluded that the government is the major provider of green infrastructure, the condition of green infrastructure is fair and the residents used green infrastructure for different purposes across the cities. On the perception of residents on green infrastructure, it can be concluded that the high level of importance that residents attached to green infrastructure was not commensurate with the level of satisfaction they derive from the green infrastructure. Also, the socioeconomic characteristics of the residents are strong determinants of their perception of green infrastructure in the study area and these determinants residents' perception includes the condition of green infrastructure in the study area.

Based on the conclusion of this study, the following recommendations are proffered:

(1) The government should put in place the policy guidelines towards the provision and utilization of green infrastructure in the study area. This will enhance the availability and condition of green infrastructure across the cities of the study area.
(2) The government should make efforts to encourage the participation of community groups, private organizations and individuals for the purpose of providing green infrastructure in order to neutralize the dominance of the government as the provider of green infrastructure in the study area.
(3) The government at the state and local government levels in the study area should put in place the physical planning frameworks, in terms of legislation and physical development plans that are eco-friendly and would provide for green infrastructure.
(4) There should be an effective collaboration between the three tiers of government in order to bring about adequate green infrastructure delivery in Nigeria communities. For this to be well incorporated there is need for government to involve private organizations and interested individuals in planning, budgeting, provision, maintenance, monitoring and evaluation of green infrastructure. This will bring about development of various spheres of life such as recreation, agricultural, educational, health and nutrition in the country.
(5) Government also needs to sensitize the public about the multiple benefits offered by urban green infrastructure in order to ensure that green infrastructure benefits are equally understood or appreciated among the residents and to increase the level of awareness of the residents on the importance of green infrastructure to their wellbeing.

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Gabriel-Virgil PAVEL[1]

PAINTING THE CITY: THE ROLE OF STREET ART AND GRAFFITI IN BUCHAREST'S URBAN TRANSFORMATION

Abstract. This paper examines how street art and graffiti influence urban regeneration, community participation and cultural identity in Bucharest. Using a qualitative approach that combines field observations, photographic documentation, and literature review, it analyzes the transformation of public spaces across both central and peripheral neighborhoods. The study emphasizes the interaction between urban art, education, and tourism, as well as its growing role in the hospitality sector. Findings show that street art acts as both a catalyst for aesthetic revitalization and a potential agent of gentrification. Mural projects enhance cultural vibrancy and neighborhood image but may displace long-term residents when not supported by inclusive policies. The article also highlights the ephemeral character of urban art and its gradual institutionalization through festivals and cultural programs. Ultimately, it argues for a balanced urban policy that recognizes the cultural and social value of street art while ensuring equity, authorship, and preservation within Bucharest's evolving creative landscape.

Key words: street art, graffiti, urban regeneration, Bucharest, ephemerality

Introduction

In recent decades, urban art, including street art and graffiti, has evolved significantly from a marginalized and often controversial form of expression into a widely recognized tool for urban regeneration and cultural development. In the context of Bucharest, a metropolis marked by diversity and architectural contrasts, urban art has emerged as a crucial mechanism

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for aesthetic reconfiguration and the revitalization of public spaces. It has played a key role in transforming negative perceptions of certain neighborhoods and in strengthening community identity and cohesion.

Street art generally refers to any form of artistic expression displayed in public spaces, particularly on exterior walls, buildings, streets, and other urban structures. Unlike traditional graffiti, which often consists of quick tags or text-based markings, street art is typically more elaborate, planned, and increasingly incorporated into community projects or official cultural events. It can take many forms, including murals, stencils, posters, urban installations or collages, and its purposes range from aesthetic or social commentary to overtly political or identity-driven statements (Mcauliffe, 2012).

Recent scholarship has emphasized the complex role of street art in processes of urban transformation and place-making. Studies show that mural projects may simultaneously attract investment and foster cultural participation, while also triggering debates about gentrification and urban equity (Cercleux, 2021; Colomb, 2012). Other research highlights the ephemeral character of urban art and its tension between heritage-making and transience (Cercleux, 2022; Young, 2014). Beyond institutional perspectives, public perceptions play a key role in legitimizing or contesting urban art, as explored by Zebracki (2013). In the case of Bucharest, recent work has further demonstrated how collaborations between artists, businesses, and communities can rebrand neighborhoods and stimulate socio-economic activities (Pavel & Cercleux, 2024; Cercleux, 2023).

Through public art interventions, areas like central Bucharest (Arthur Verona Street and Grădina Icoanei), Calea Griviței but also some marginalized neighbourhoods like Ferentari have experienced notable transformations, reflecting positive shifts in the city's socio-cultural and economic dynamics. Recent studies highlight how urban art can enhance neighborhood attractiveness, boost cultural tourism, and consolidate local identity, essential aspects in the face of modern urban challenges (Cercleux, 2025).

Materials and Methods

This study adopts a qualitative research methodology based on case study analysis, field observations, and literature review. Primary data was collected through direct observation of street art installations in various Bucharest neighborhoods during 2024–2025. Key sites include Arthur Verona Street, Calea Griviței, Berzei Street, and the Ferentari district. The most of the photographs were taken by the author of this study. Secondary sources include academic journals, municipal reports, and curated online platforms such as Un-hidden Romania and Street Art Cities.

Results

Arthur Verona Street, central to the Street Delivery Festival, exemplifies street art's ability to reinvigorate urban areas. The festival, hosting local and international artists such as IRLO, Pisica Pătrată, and Saddo, has turned the street into an iconic artistic landmark. These murals, rich in ecological and socio-political themes, attract significant pedestrian traffic and international attention, fundamentally altering both public interaction and commercial vibrancy in the area.

Prominent murals in Bucharest's city center, including "United Colors of Bucharest" and reinterpretations of Romanian historical icons, reflect urban art's transformative influence on cultural dynamics. These works, documented in scholarly literature, have catalyzed entrepreneurial ventures such as cafes, galleries, and boutique shops, revitalizing previously underutilized spaces and enhancing urban liveliness and cultural vibrancy (Cercleux, 2021).

Street art in Bucharest is not limited to public walls, it has also entered the realm of education, influencing schools both as a form of artistic expression and a tool for social engagement. This article explores the relationship between street art and educational institutions in Bucharest, analyzing its role in student creativity, urban aesthetics, and community projects.

Schools have also played a catalytic role in promoting urban art within the Ferentari neighborhood. Here, particularly in the areas surrounding

Trompetului and Bachus streets, several collaborative projects have been undertaken between educational institutions, urban artists, and local authorities. A notable example is Special Secondary School No. 9 (Figure 1), whose project significantly benefited both students and the local community, addressing issues of marginalization and inclusivity. Similarly, George Călinescu Middle School exemplifies good practice in this neighborhood, having commissioned a large-scale mural on the school's exterior wall, portraying the well-known Romanian writer after whom the school is named.

a)

b)

Figure 1. Mural paintings at Special Secondary School Number 9, Trompetului Street, Bucharest by Serebe (a) and Alexa Lincu (b) (2021)
Source: Un-hidden Romania

The urban art project implemented at Special Secondary School Number 9 is quite complex, featuring three large-scale murals. The work is part of the Un-hidden Romania project and involves a multidisciplinary artistic intervention created for children, school staff, and the public space. It was co-produced by Alexa Lincu (mural painting) and Xandru (audio composition). The school is located at 34 Trompetului Street, and the artwork is visible from Sulfinei Street. By scanning the QR code incorporated into the artwork, urban explorers can listen to the audio composition created for this piece by the artist Xandru.

The area with the highest density of urban art in Bucharest is the perimeter defined by Arthur Verona Street, General Eremia Grigorescu Street, Grădina Icoanei, and Piața Romană. Here, some of the most well-known murals in the Romanian capital can be found, many of which particularly attract art-loving tourists. This area, along with others in central Bucharest, has seen a growth in urban art projects. While some works have disappeared since the beginning of this phenomenon, the number of artworks that can be categorized as urban art has increased significantly since 2015-2016. These have also contributed to beautifying the streetscape, as many of the buildings had fallen into disrepair in recent years. At the same time, the graffiti phenomenon has also expanded considerably, often having a more negative impact by defacing building façades (Cercleux, 2022).

One of the defining characteristics of street art is its inherent ephemerality. Unlike gallery-bound works, murals and urban interventions exist in a dynamic, often temporary dialogue with their environment (Cercleux, 2022). This transient nature is exemplified by the mural "Make a Point" on Eremia Grigorescu Street, created in 2015 by the Sweet Damage Crew (Figure 2). The artwork, depicting a woman drawing her own universe, became one of Bucharest's most iconic and photographed murals. However, in 2024, the wall underwent a transformation, giving rise to a new creation: "Homage to Brâncuși" a collaboration between artist Felicia Simion and the original crew.

These cycles of renewal are not unique to this location. Throughout Bucharest, street art is continually being overwritten, refreshed, or removed, either by the passage of time, urban development or new commissions. While this reinforces the medium's vibrancy and relevance, it also poses challenges for preservation and historical documentation. As such, the

ephemerality of urban art serves as both a symbol of creative freedom and a reminder of its fragility in the urban landscape.

a) b)

Figure 2. The mural on 12th Gen. Eremia Grigorescu Street, Bucharest:
a) "Make a Point" by Sweet Damage Crew (2015-2024);
b) "Homage to Brâncuși" by Felicia Simion and the original crew (since 2024)
Source: author's photos, 2023 (a) and 2025(b).

It is important to observe how urban art has contributed to the revitalization of old neighborhoods in the city center, while in other areas of the city, such as the Ferentari district, it has played a role in casting a positive light on this marginalized periphery, which has often been seen as unfavorable for investors. Additionally, the connection between urban art and the development of various businesses in the HoReCa sector is quite evident, particularly in Bucharest's historic neighborhoods (Cercleux, 2021).

Integrating street art into both the interior and exterior design of businesses allows them to craft visually engaging spaces that appeal to both tourists and locals. These artworks help establish a distinct identity and set the venue apart from competitors. Moreover, by supporting local artists, such businesses actively contribute to the cultural vitality of Bucharest, reinforcing its image as a dynamic artistic center. A relevant example is Heavy Yard, a restaurant situated in the historic area of Bucharest on Vasile Lascăr Street. In June 2024, a group of young local street artists created a large-scale mural covering the façade of an old house, adding both character and cultural value to the location (Pavel, 2024).

In areas like Lipscani, Arthur Verona, or the Uranus neighborhood, the interplay between new cafés and street art has supported urban regeneration. Murals often serve as landmarks, encouraging foot traffic and increasing the attractiveness of surrounding real estate, both commercial and residential. This reflects a wider European trend seen in cities like Berlin or Lisbon, where art-led regeneration supports both hospitality and tourism economies (Colomb, 2012). Moreover, some HoReCa venues capitalize on street art by turning murals into brand assets – printing them on menus, merchandise, or packaging. This not only reinforces the venue's identity but also offers artists wider exposure.

In recent years, the street art phenomenon has also become an important branch of urban tourism in Romania's capital. This is evidenced by the growing number of cultural events, guided tours, and festivals dedicated to urban art. Perhaps the most prominent example is the Outline StreetArt Festival, launched in 2019 by the E.D.I.T Association and Sweet Damage Crew, with the aim of systematically creating a series of mural paintings, initially in Bucharest's Sector 2, with plans to expand to other areas of the city. The festival became well known in 2022, when 20 artists completed 15 large murals on gray infrastructure, transforming gangways, heating stations, parking garages, and apartment buildings. At that time, the mayor Radu Mihaiu praised the festival's impact, stating that the project beautified the sector, turning dark gangways into vibrant spaces (Asociația E.D.I.T., 2022).

The October 2022 edition, with its theme "ARTOGETHER", encouraged local feedback (Figure 3). Festival coordinator Loredana Bărdăș emphasized how residents shifted from skepticism to gratitude as murky buildings gained color. Guided mural tours continued into November, underscoring the event's role in educational outreach and creative placemaking (Asociația E.D.I.T., 2022).

Figure 3. The event poster for "ARTOGETHER," organized by the Outline StreetArt Festival, featuring a selection of the murals included in the project, October 2022
Source: Outline StreetArt Festival website

The 2023-2024 edition of the festival featured murals honoring Romanian icons like Olympic champion David Popovici and brought new life to major boulevards. There have been also other cultural events and festivals promoting street art in Bucharest, such as Street Delivery Festival and Bucharest Street Art Festival (former Stickerz Festival).

These festivals collectively have the objective to amplify community cohesion through local engagement and public dialogue and drive socio-economic activation in neglected neighborhoods, aligning with broader European urban art strategies (Colomb, 2012). They also serve as platforms that balance ephemerality and preservation, capturing the temporal essence of street art while encouraging archiving and curation. These street art festivals are very important because they create collaborative spaces where artists, architects, urban planners, educators, and local entrepreneurs intersect, sparking creative synergies that can influence city policy, spatial design, and community-driven development (Cercleux, 2021). This interdisciplinary dynamic transforms festivals from mere cultural showcases into experimental urban laboratories.

Street art has become a subtle yet powerful tool in the regeneration of urban spaces in Bucharest, often serving as a visual and cultural signal of neighborhood revitalization. In areas such as Lipscani, Arthur Verona,

and Calea Moșilor, the presence of large-scale murals and curated street art has helped reposition formerly neglected or decaying spaces as vibrant, walkable, and aesthetically attractive zones. These artistic interventions not only improve the visual landscape but also attract foot traffic, events, and creative entrepreneurship. For instance, Cercleux (2021) note that urban art projects can "produce new urban identities" and generate economic activity by boosting local businesses, particularly in the HoReCa sector.

However, the cultural regeneration enabled by street art is not without its complexities. In some cases, these interventions contribute to processes of gentrification, where the artistic revitalization of a space precedes rising property values, displacement of long-term residents, and a shift in neighborhood demographics. An illustrative case is the transformation of parts of Carol Park's vicinity and the Uranus neighborhood, where murals and cultural hubs attracted new investments and boutique developments. While these changes often signal progress, they also risk eroding the social fabric of communities if not coupled with inclusive urban policies (Colomb, 2012). In this way, street art both beautifies and complicates the urban narrative, functioning as both a catalyst for positive change and a potential driver of exclusion if left unregulated.

Graffiti plays a controversial yet deeply embedded role in the urban landscape of Bucharest. Found along railway corridors, abandoned buildings, and underpasses, graffiti often expresses dissent, identity, and territoriality. While many residents perceive it as visual pollution, especially when it covers historical façades or public signage, others see it as a genuine expression of subcultural creativity. In some areas, such as Gara de Nord or beneath the Basarab Bridge, graffiti has become part of the city's informal heritage, reflecting youth culture and underground movements in a way that contrasts sharply with more institutionalized art forms.

In Bucharest, graffiti is particularly visible along train lines, abandoned buildings, and underpasses. While some of these expressions are dismissed as vandalism, others have gained recognition as part of the city's visual identity. Collectives such as Nom Crew have created pieces that blur the line between graffiti and street art, combining technical skill with social commentary. Nonetheless, widespread tagging has also drawn criticism from residents and city officials, especially when it affects heritage buildings or newly renovated façades.

The main distinction between graffiti and street art lies in intent, execution, and public reception. Street art is often planned, aesthetically driven, and socially engaged, frequently realized with permission or within festivals like Outline or Street Delivery. Graffiti, by contrast, emphasizes immediacy, anonymity, and resistance to institutional norms. In Bucharest, these differences influence how each form is regulated, preserved, or erased, reflecting broader societal attitudes toward public space, authorship, and legitimacy (Zebracki, 2013; Young, 2014). As both continue to shape the urban fabric, a nuanced understanding is essential for policymakers and cultural stakeholders navigating the fine line between control and creative freedom.

*Figure 4. G*raffiti on an abandoned building in central Bucharest
(Nicolae Golescu Street)
Source: author's photo, 2025

A representative example of the complex visual and cultural impact of graffiti can be seen at 8th Nicolae Golescu Street, in the central area of Bucharest. The building's façade, covered in bold, unauthorized lettering and layered tags, is further marked by boarded-up windows, signs of urban decline that coexist with vibrant visual interventions. As shown in Figure 4, this juxtaposition reflects the duality often associated with graffiti: while it may be perceived as vandalism or a signal of neglect, it also serves as a raw form of territorial marking and artistic presence. Such locations raise important questions about the line between cultural

expression and urban degradation, particularly in zones undergoing transition or awaiting redevelopment (Young, 2014). The image underscores how graffiti can simultaneously act as both a visual symptom of abandonment and a form of resistance within contested urban space.

Discussion

The findings of this study confirm that urban art – especially in the form of street art – plays a multifaceted role in the regeneration of Bucharest's public spaces. Through spatial beautification, community engagement, and the activation of underutilized infrastructure, street art helps redefine the urban landscape, especially in post-socialist contexts where rapid change and uneven development have produced zones of aesthetic and social tension. As highlighted by Cercleux (2021), mural interventions in areas like Arthur Verona and Eremia Grigorescu Street not only attract tourism and commercial activity but also contribute to symbolic placemaking, reinforcing local identity and cultural continuity in a city marked by historical discontinuities.

At the same time, the research reveals complex socio-economic effects tied to urban art. While murals can support the revitalization of marginalized districts such as Ferentari, especially when tied to educational and participatory project, they may also contribute to gentrification pressures when adopted for branding purposes in central neighborhoods. This dual potential, documented in both Bucharest and comparable cities across Europe (Colomb, 2012; Zebracki, 2013), calls for carefully designed policies that integrate artistic freedom with inclusive development strategies. Additionally, the coexistence of sanctioned street art and unsanctioned graffiti, as evidenced by sites like Nicolae Golescu Street, underscores ongoing tensions between creative expression and the regulation of public space (Young, 2014).

Moreover, as street art becomes institutionalized, via festivals like Street Delivery or platforms such as Street Art Bucharest, it navigates a delicate balance between spontaneity and regulation. This tension raises important questions about authorship, artistic freedom, and urban governance. While artist collectives such as Sweet Damage Crew maintain a grassroots

ethos, their increasing collaborations with local councils and cultural institutions demonstrate the evolving formalization of urban art in the public sphere.

Finally, the issue of preservation remains contentious. As discussed earlier, ephemerality is a defining trait of street art, yet this temporality challenges the continuity of collective memory and artistic legacy. Efforts to digitally archive murals, through initiatives like Un-hidden Romania's online map, are crucial for documenting these transient cultural expressions and enabling longitudinal analysis of the city's visual evolution (Save or Cancel, 2024).

Conclusion

This study demonstrates that urban art in Bucharest serves as a vital tool for cultural expression, aesthetic transformation, and social activation. Street art contributes to the revitalization of public spaces, the empowerment of communities, and the promotion of the city as a dynamic artistic hub. However, it also presents challenges related to preservation, accessibility, and urban equity. To ensure that urban art continues to benefit Bucharest's diverse communities, city planners, cultural institutions, and residents must collaborate to support inclusive, community-driven projects while also navigating the delicate balance between artistic autonomy and urban governance. A nuanced and context-sensitive approach will be essential for preserving the vibrancy, accessibility, and authenticity of Bucharest's evolving urban art scene.

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Antonio SASU[1]

MIGRATION OF THE WORKING POPULATION IN DÂMBOVIȚA COUNTY BY AGE GROUPS

Abstract. This article analyzes the migratory movement of the working-age population in Dâmbovița County, with a particular focus on both definitive emigration and permanent immigration during the 1992-2023 period.The study aims to identify the magnitude, structure, and long-term implications of these demographic flows by age group and to evaluate their impact on the local social and economic environment. Migration data were processed for the active population aged 15–64, since this category represents the most dynamic and productive component of society and is directly linked to the labor market, demographic renewal, and regional development.The research also includes a ten-year forecast (2024–2034), based on statistical modeling of past trends and demographic indicators, allowing the estimation of future population movements and their potential effects. These projections are essential for anticipating challenges related to labor force availability, economic competitiveness, and social cohesion in the county. The article therefore examines the migration balance, the intensity of emigration and immigration by age categories, and the evolution of these indicators over time, highlighting both the risks and opportunities that migration generates for Dâmbovița County in the next decade.

Keywords: emigration, immigration, forecast, working population

1. Introduction

The definitive migration movement in Dambovita (Figure 1) county was and is an important movement in the dynamics of the demography of Dambovita county. In the period 1992-2023, emigrated 5294 people aged between 15-64 years (people capable of work), practically emigrating well-trained labor force, many of them are high school, university, postgraduate or professional graduates, so a very well-trained category of work.

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How do I know this? In the period 2022-2024, a case study was conducted by the author on graduates intending to emigrate definitively, out of 223 respondents' answers, more than 135 graduates plan to stay permanently off-limits (study conducted on a sample size of 385 graduates, 95% confidence level, 4.5% error margin); emigrate workforce that could bring added value to the economy of Dambovita county, cultural, social, educational or private sector life in the county.

The able-bodied people in the county choose to emigrate permanently, this can be seen also in the average number of employees by counties, this number having a negative dynamic, this number, from 147255 employees in 1992 to 85988 in 2023.

Final immigration is low in the county, with 3,183 people immigrating. The migration balance is negative (-2777 people) at county level.

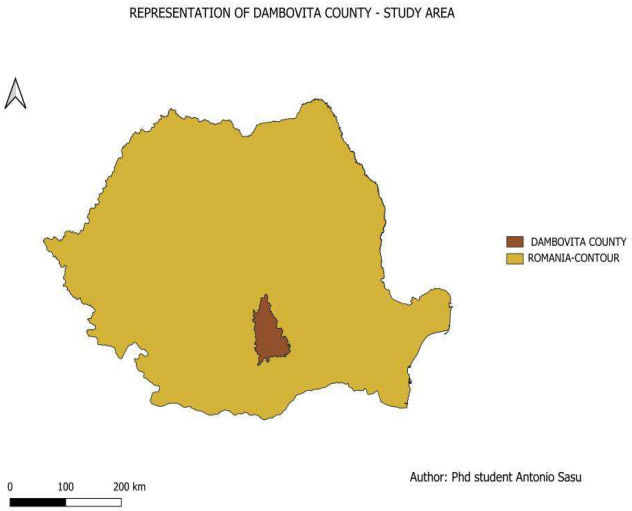

Figure 1. Represantation of Dambovita county
Source: processed data in QGIS 3.45, EPSG:3844-Pulkovo

2. Literature Review

Based on the census data from 1977, Dumitru Sandu (1984) mentioned the migration directions of the population from Dambovita county, this being mainly rural-urban, that is, from village to city, or urban-urban,

from small towns, mono-industrial (emphasis of the author), to large, developed ones, especially towards Bucharest.

OECD (2025) shows that the working age population (15-64 years) in Romania will decrease by ~15% between 2024 and 2040. It also stresses that emigration has contributed significantly to the reduction of the workforce.

OSW CENTRE FOR EASTERN STUDIES (2025) examines the persistent emigration trend of young people (14-35 years) and the consequences on the domestic workforce.

Daniela Ghio et all (2022) makes a European analysis on the impact of migration on the working age population ("working-age") at territorial level; reveals how migration and cohort turnover affect the age structure.

Andreea-Elena Vorovenci & Dan Dragomirescu (2025) makes a long-term analysis of the ageing of the Romanian population; it includes the structure by age group and the influence of migration.

Bogdan Suceava (2019) mentioned in his book Dambovita County, especially the city of Gaesti, as the place where many intellectuals could have left for the U. S. At the level of Dambovita County, no research has yet been done on the emigration and immigration of the working-age population or emigration and gender immigration

The National Institute of Statistics (INSSE_TEMPO Online) provides statistical data on migration and definitive immigration.

3. Methodology

The methodology used to draft the article was as follows: the TEMPO Online statistical database, section A.3 –Migratory movement of the population and Immigrants with permanent residence change. The selected age groups were those able to work, respectively from 15 years to 64 years (at the level of Dambovita county), and the selected periods were those available in the statistical database, that is, the interval 1992-2023.

The data were saved in the CSV document, tables with the above-mentioned data, as well as graphs of different types were created. Regarding the forecast, this was done in Microsoft Excel, through the Forecast function.

The forecast was made for the period 2024-2034, that is, the next 10 years.

4. Data, Results and Discussion

The definition for permanent emigrants offered by INSSE is the following: "Immigrants with the change of residence are persons of Romanian citizenship who emigrate abroad. Emigration is the action by which a person renounces his domicile in Romania and establishes his domicile on the territory of another state".

The definition for definitive immigrants offered by the same Institute is the following: "Immigration is the action by which a person renounces his domicile on the territory of another state and establishes his domicile in Romania".

Different Romanian geographers have treated the phenomenon and defined it as follows.

The Dictionary of Human Geography (George Erdeli and the collective, 1999) defines migration as "a process by which individuals change their place of residence definitively or temporarily. Geographer Teodor P. Simion (2011) mentions the following regarding the phenomenon, saying that "the established term on the mobility of the population is migration, which is external or internal, individual or collective with various motivations".

As for the age group 15-19 years, that is, very young, there is a very high probability that among them there are young people who have not started high school, high school, high school, or who have not yet finished high school, but there may be those who have not attended a professional school or have not enrolled in college. The number of young people who emigrated permanently in the period 1992-2023 was 788 people out of the total of 5,924 emigrants, that is 13.30% (Figure 2).

Regarding definitive immigration for the same age category, 190 people emigrated from a total of 3,183 immigrants (1992-2023), representing 5.96%, so, more people of this age choose to emigrate than emigrate. This includes the particular context of Dambovita County, the labor offer, the salary level offered, the urban and rural logistics offer, cultural and educational.

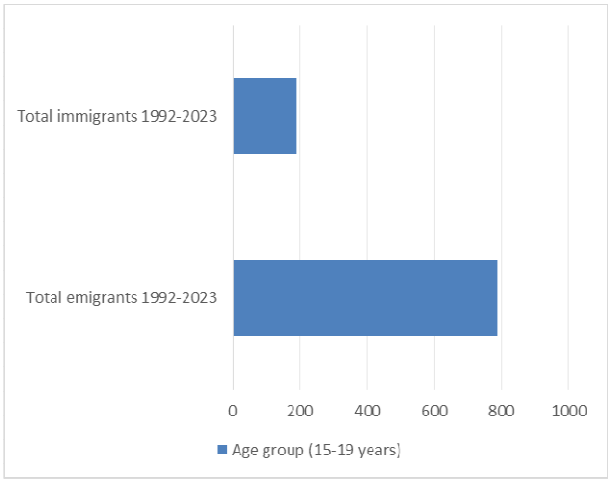

Figure 2. Total emigrants and immigrants, age group 15-19 years
Source: INSSE TEMPO Online – processed data

For the age group 20-24 years, the number of permanent emigrants in the range 1992-2023 was 692 (Figure 3) of the total 5924, representing 11.68%; defined immigrants in this age group total 504 immigrants out of the total 3,183 immigrants, representing 15.83%, so Dambovita County is much more interesting for this age category than for the previous age group.

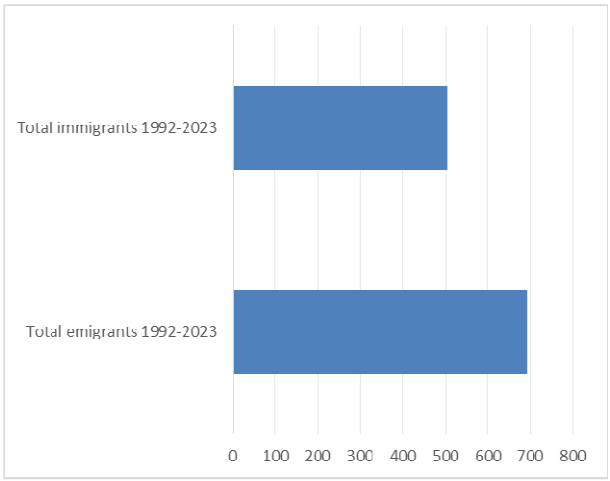

Figure 3. Total emigrants and immigrants, age group 20-24 years
Source: INSSE TEMPO Online – processed data

The age group 25-29 years totals in 31 years (1992-2023) 1016 people out of a total of 5924 (Figure 4); it is the age group with the highest number of permanent emigrants, having the highest share (17.15%), the same dynamic is preserved for immigrants, it is the age category that chose the highest proportion (16.08%)-560 immigrants choose to settle in Dambovita county in 31 years.

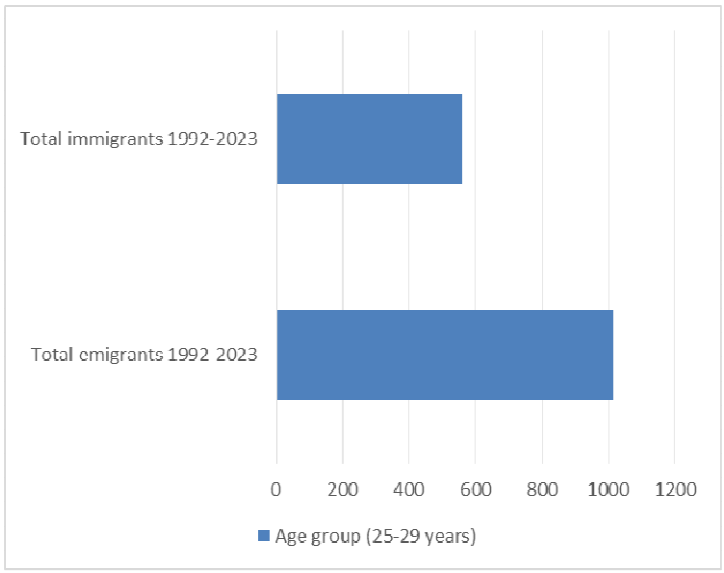

Figure 4. Total emigrants and immigrants, age group 25-29 years
Source: INSSE TEMPO Online – processed data

The age group 30-34 years total 918 people who emigrated permanently (15.49%), and in the case of permanent immigrants the share was 15.83%-504 immigrants (Figure 5). We're talking about roughly equal percentages, but the total population values that enrolled in the migration movement differed (918 emigrants out of a total of 5,924 compared to 504 immigrants out of a total of 3,183 immigrants).

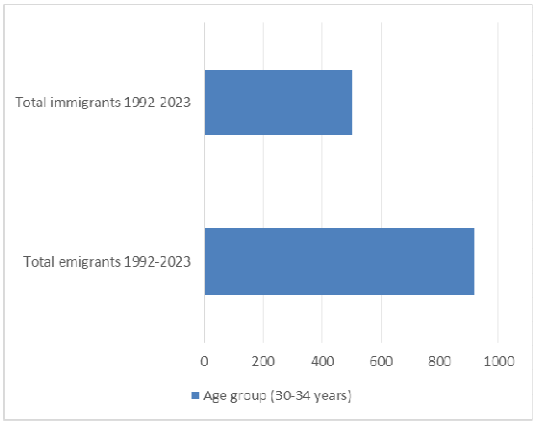

Figure 5. Total emigrants and immigrants, age group 30-34 years
Source: INSSE TEMPO Online – processed data

As regards the age group 35-39 years, it totals 904 permanent emigrants (15.25%) and 375 immigrants (11.75%) – Figure 6. These five age categories are very important in the demographic dynamics of Dambovita County, practically should have remained in the county well-trained young people, future students, master students, doctoral students, etc, workers or other important socio-professional categories. Considering that the average of births in Romania is 26.9 years (INSSE, Demography), we can consider that the birth rate has decreased because a lot of women emigrated between 1992-2023.

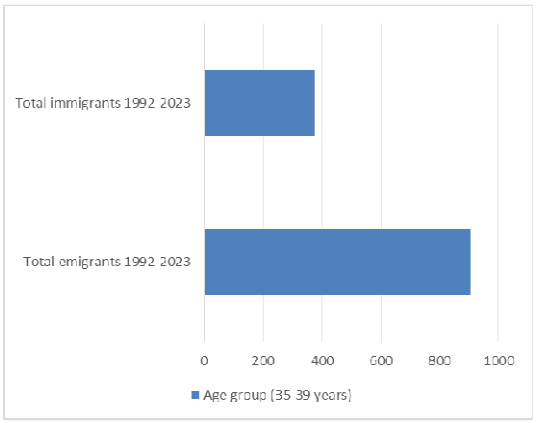

Figure 6. Total emigrants and immigrants, age group 35-39 years
Source: INSSE TEMPO Online – processed data

The differences between emigrants and emigrants for the above five categories are as follows (Figure 7).

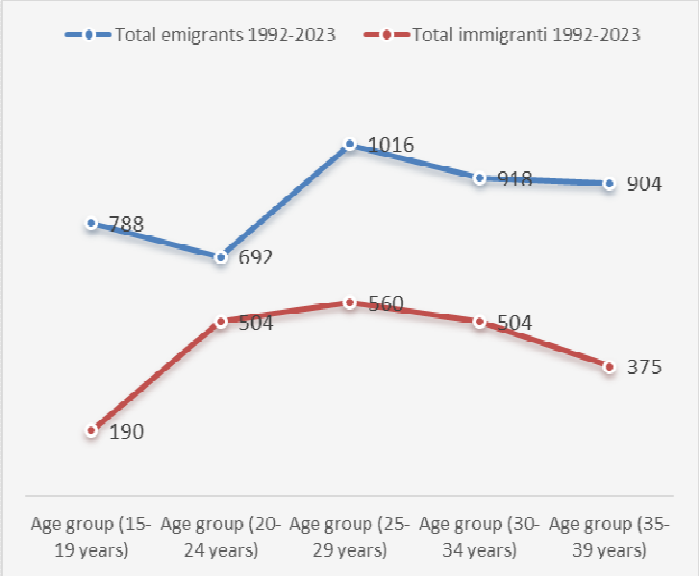

Figure 7. Differences between immigrants and immigrants (total 1992-2023)
Source: INSSE TEMPO Online – processed data

For the following age groups, namely 40-44 years, 45-49 years, 50-54 years, 55-59 years, 60-64 years, the situation is as follows (Figure 8, Tables 1 and 2):

– 644 Defining emigrants (age group 40-44 years) and 359 definitive immigrants
– 497 Defining emigrants (age group 45-49 years) and 257 definitive immigrants
– 270 Defining emigrants (age group 50-54 years) and 217 definitive immigrants
– 137 Defining emigrants (age group 55-59 years) and 119 definitive immigrants
– 58 Defining emigrants (age group 60-64 years) and 94 definitive immigrants.

Table 1

Number of Migrants Defining in Dambovita County, Age Group 40-64 Years

Age group (years)	Number of migrants defining
40-44	644
45-49	497
50-54	270
55-59	137
60-64	58

Source: processed date

Table 2

Number of Definitive Immigrants in Dambovita County, Age Group 40-64 Years

Age group (years)	Number of definitive immigrants
40-44	359
45-49	257
50-54	217
55-59	119
60-64	94

Source: processed date

Regarding the last age group (60-64 years) it can be seen that there are many more immigrants, this having a bad consequence for the county: more people come to the county who will need pensions in the near future, who have not paid to the state budget and will need social support because of their old age.

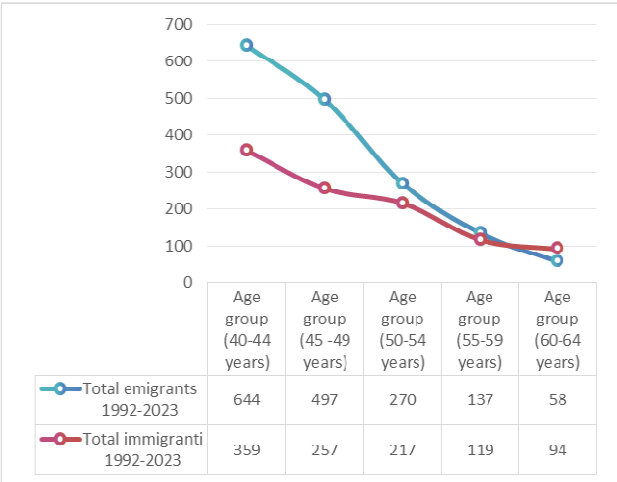

Figure 8. Differences between immigrants and immigrants (total 1992-2023)
Source: INSSE TEMPO Online – processed data

The migration balance sheet for Dambovita County (respectively the number of immigrants coming to a country (-) the number of migrants leaving their country) is negative, this means that there are more who emigrate from Dambovita county than those who come to the county. The data looks like this (Figure 9 and Table 3).

It can be seen that the number of those who leave their country, in this case their county, is higher (5924 people), and the number of those who come to the country, in this case, the county of Dambovita is smaller (3,183 people), indicating a negative migration balance for Dambovita County (-2,741 people). So Dambovita County loses in 31 years 2741 people able to work.

Table 3

Migration Balance in Dambovita County (1992-2023)

Emigrants Dambovita (total 1992-2023)	Immigrants Dambovita (total 1992-2023)	Migration balance-Dambovita
5924	3183	-2741

Source: processed data

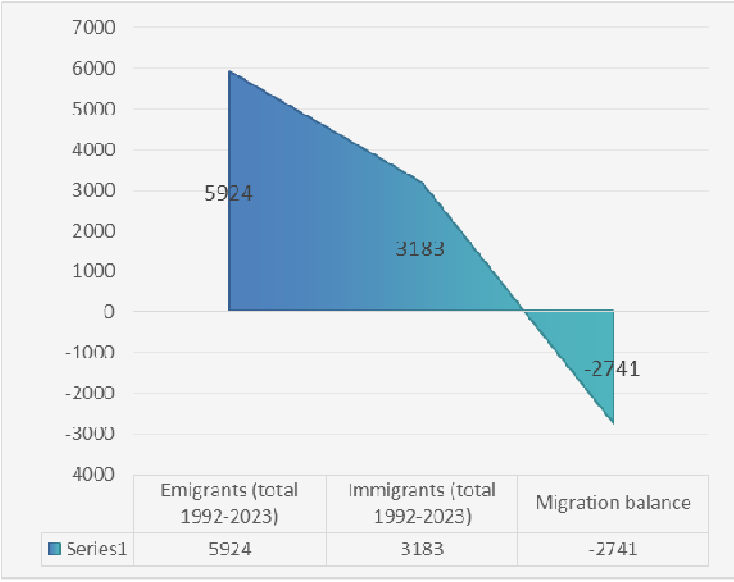

Figure 9. Migratory balance sheet
Source: processed data

The forecast (Figure 10, Tables 4 and 5) for the next ten years (2024-2034) regarding definitive emigration and definitive immigration at the level of Dambovita County is as follows:

– for the age group 15-19 years (985 emigrants and 228 immigrants)
– for the age group 20-24 years (632 emigrants and 581 immigrants)
– for the age group 25-29 years (857 emigrants and 269 immigrants)
– for the age group 30-34 years (817 emigrants and 306 immigrants)
– for the age group 35-39 years (918 migrants and 181 immigrants)
– for the age group 40-44 years (873 emigrants and 173 immigrants)
– for the age group 45-49 years (615 emigrants and 112 immigrants)
– for the age group 50-54 years (371 emigrants and 95 immigrants)
– for the age group 55-59 years (197 emigrants and 51 immigrants)
– for the age group 60-64 years (60 emigrants and 38 immigrants)

Table 4

Forecast (2024-2034) for Emigrants in Dambovita County

Age group (years	Number of emigrants (forecast)
15-19	985
20-24	632
25-29	857
30-34	817
35-39	918
40-44	873
45-49	615
50-54	371
55-59	197
60-64	60

Source: processed data

Table 5

Forecast (2024-2034) for Immigrants in Dambovita County

Age group (years)	Number of immigrants (forecast)
15-19	228
20-24	581
25-29	269
30-34	306
35-39	181
40-44	173
45-49	112
50-54	95
55-59	51
60-64	38

Source: processed data

From these data, the following conclusions can be drawn:

The forecast for the next years in terms of emigrants is much higher than it was in 31 years, so in 10 years the growth is much higher, that is, a value of 6325 emigrants. The prognosis for immigrants is much lower than the values have been in the last 31 years, only 2034 people will emigrate to Dambovita, so the migration balance for the next ten years will deepen.

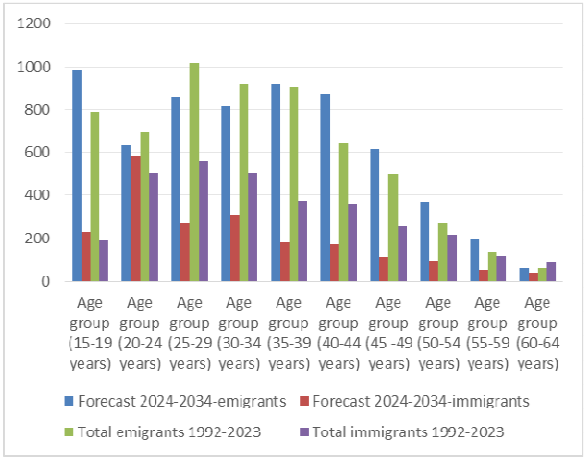

Figure 10. Forecast for the next ten years (2024-2034) as regards definitive emigration and definitive immigration at Dambovita county level
Source: processed data

Conclusions

Emigration to Dambovita county in the period 1992-2023 was higher than immigration from the same interval, namely 5,924 permanent emigrants and 3,183 definitive immigrants, this gave a negative migration balance.

The most exposed age group to this phenomenon is the 25-29 years old group, basically those who have completed their studies, or who are looking for a job, who may also have children or are in the process of drawing up a family. The forecast shows changes in the age pyramid for those who emigrate; in the next ten years (2024-2034), those in the 15-19 age group will emigrate the most; dambovita County will receive people from the age group 20-24 years in the next ten years.

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All links were verified by the author and found to be functioning before the publication of this text in 2025.

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EVOLUTIONARY ASPECTS REGARDING TOURISM DEVELOPMENT IN THE MUNICIPALITY OF ORADEA

Abstract. The evolution of tourism in Oradea reflects strategies aimed at infrastructure modernization, cultural heritage preservation, and service diversification. The rehabilitation of the historic center, highlighting Art Nouveau architecture, has enhanced the city's attractiveness and identity. Simultaneously, the growth of the hotel industry and the promotion of Băile Felix resort, renowned for its therapeutic resources, have stimulated health tourism. Cultural events and festivals increased visitor flows, consolidating Oradea as a regional hub. Accessibility improvements, through integration into national and international transport networks, further supported development. Research underlines the positive impact of infrastructure investments on tourist demand. The COVID-19 pandemic caused a temporary decline in arrivals and overnight stays, but recovery followed due to adaptation and revitalization measures. Overall, tourism in Oradea illustrates a coherent process of modernization and promotion, contributing to local economic growth and enhancing the city's visibility nationally and internationally.

Keywords: *tourism demand, tourism infrastructure, Oradea municipality, local development*

1. Introduction

Urban tourism plays an essential role for the economic and social development of cities, having a significant impact on infrastructure, the business environment, and cultural heritage. The city of Oradea, located in northwestern Romania,

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is a successful example of integrating tourism into urban development strategies, benefiting from a well-defined strategic framework and constant investments in the modernization of tourism infrastructure.

The city of Oradea is an important urban center located in northwestern Romania, near the border with Hungary. Oradea is the capital of Bihor County and stands out for its sustained economic and tourist development, due both to its strategic geographical position and to constant investments in infrastructure and heritage. The city is at the crossroads of Western cultural influences and those specific to Romania, benefiting from a rich architectural heritage in the Secession style, numerous tourist attractions, and a constantly expanding network of tourist services. The development of tourism in Oradea is closely linked to the modernization of infrastructure, the promotion of the city as an attractive destination, and the exploitation of local resources, including thermal waters, which have contributed to the consolidation of spa tourism in the area. The analysis of the evolution of tourism in Oradea takes into account both the economic and urban transformations of the city and their impact on tourist flows, investments in the hospitality sector, and the city's positioning on the map of tourist destinations in Romania.

In recent years, tourism in Oradea has undergone a considerable transformation, determined by the implementation of coherent development policies. The 2017-2023 Integrated Urban Development Strategy aimed to increase the city's attractiveness by revitalizing the historic center, promoting Art Nouveau heritage, and modernizing tourism infrastructure, measures designed to strengthen the city's position on the national and international tourism map. With the new 2021-2027 strategy, the focus has shifted to strengthening thematic tourism by diversifying tourist types and creating integrated packages that encourage visitors to stay longer.

Oradea has distinguished itself through a series of initiatives aimed at capitalizing on local tourism resources. These include the development of spa tourism, by integrating the Băile Felix and Băile 1 Mai resorts into national and European tourist circuits, expanding cultural infrastructure, and promoting themed events such as the Short Theater Festival and the Days of the Fortress. In addition, investments in transport and connectivity, including the modernization of Oradea International Airport and improved road accessibility, have contributed to an increase in tourist flows.

In this context, this study analyses the evolution of tourism in the municipality of Oradea from the perspective of economic, urban and cultural transformations, highlighting the impact of development strategies on this sector. More specifically, the study aims to answer the following research questions:

1: To what extent has the development of accommodation infrastructure led to increased tourist demand and the development of tourism in the municipality of Oradea?
2: How is tourism development in Oradea reflected in terms of infrastructure development and tourism attractiveness in the regional context?

Using an integrated approach, the research aims to highlight recent trends and provide insight into the future directions of tourism development in Oradea.

2. Study background and scientific literature

2.1. Oradea municipality

Urban tourism is an essential element of sustainable urban development, contributing to economic regeneration and strengthening local identity (Boca, 2018). The municipality of Oradea has undergone an extensive process of urban regeneration, influenced by post-industrial economic transformations. During the communist period, Oradea experienced forced industrial development, followed by a significant decline after 1990, which led to the abandonment of large industrial spaces (Boca, 2018). These spaces are now the subject of reconversion strategies, with the potential to become relevant tourist centers by integrating them into sustainable urban development plans.

At the same time, the Băile Felix – Băile 1 Mai tourist system, located near Oradea, played an important role in the tourist dynamics of the area. This spa resort has undergone continuous development and is renowned for its natural resources, such as thermal waters, which have

generated a consolidated curative tourism industry (Herman & Tătar, 2015). Over the years, the expansion of the tourism infrastructure and the increase in the number of accommodation units have contributed to attracting a constant flow of tourists, thus consolidating Oradea's position as a regional tourism hub.

Another key aspect in the development of tourism in Oradea is the relationship between tourism and local development. Recent studies have shown that tourism has had a significant impact on the local economy, reflected in the increase in the number of companies in the tourism sector, jobs, and tax revenue generated by this sector (Herman *et al.*, 2018). Between 2000 and 2014, the number of companies in the tourism sector in the Oradea – Băile Felix – Băile 1 Mai area increased considerably, demonstrating the essential role of tourism in the socio-economic development of the region.

A key element in the development of tourism in Oradea is also a sustainable approach to cultural tourism resources, especially in the metropolitan area of Oradea. Studies have shown that the cultural resources of this area are underutilized, although they have a high potential to attract tourists (Tătar et al., 2021). Integrating these resources into the tourist circuit through digitization and promotion can contribute to a more balanced distribution of tourist flows, reducing pressure on already highly frequented areas such as Băile Felix and Băile 1 Mai.

Furthermore, the development of tourism in Oradea is also influenced by sustainability strategies implemented at the local level. The Local Agenda 21 of the municipality of Oradea has played a significant role in promoting the principles of sustainable development, emphasizing environmental protection, efficient use of resources, and the integration of tourism into local economic strategies (Henț, 2013). This approach is essential for maintaining a balance between economic development and the conservation of natural and cultural heritage.

Thus, the analysis of evolutionary aspects regarding tourism development in Oradea must be carried out in correlation with urban regeneration processes, the expansion of tourism infrastructure, and the economic impact of this sector. In this context, a sustainable approach is needed, allowing the integration of the city's natural and cultural

resources into long-term development strategies, taking into account current trends in European tourism.

In relation to the research questions stated above, the purpose of this paper was to highlight, from a quantitative statistical point of view, based on data provided by the National Institute of Statistics, the evolution of the most important tourism indicators regarding accommodation infrastructure and tourism demand on the one hand, and to show the importance of tourism development projects included in the economic development strategies at the level of the municipality of Oradea. At the same time, we conducted an analysis in a broader administrative context, highlighting the important role played by the municipality within Bihor County and the North-West Development Region.

The usefulness of this work is manifold. Despite its simple scientific approach, the data analysis proves to be suggestive and effective in highlighting the evolution of accommodation infrastructure and tourist demand at the municipal level, serving as a model of analysis that can be replicated by scholars and stakeholders interested in this field. At the same time, the evolutionary results, balanced with quantitative and qualitative assessments of policies and strategies, highlight the importance of governance and financing (investments) for this field. The results may therefore also be of interest to other actors interested in evaluating this field (within the tourism industry, administrative authorities, etc.), who can use them to scientifically justify the results of the practical measures intensified in recent years for the socio-economic development of the municipality of Oradea.

2.2. Studies on infrastructure dynamics and tourism development in Romania

Infrastructure is the foundation of any tourism activity, providing both the material support and the organizational framework through which natural and cultural resources are exploited. The evolution of tourism infrastructure in Romania after 1990 reflects the profound changes brought about by the transition to a market economy, as well as by the processes of European integration and adaptation to global trends. Specialised studies emphasise that adequate infrastructure – transport,

accommodation, leisure, cultural or digital – is an essential condition for the attractiveness and competitiveness of destinations (Glăvan, 2003).

In the first post-communist decades, Romania's tourism infrastructure experienced a sharp decline, caused by a lack of investment and the deterioration of existing facilities. Light and Dumbrăveanu (1999) show that, during that period, tourism policies faced major difficulties in terms of privatization, the lack of coherent strategies, and the absence of standards aligned with international requirements. However, after joining the European Union, non-reimbursable funding programs enabled the regeneration of key infrastructure, particularly in spa resorts and large cities (Erdeli *et al.*, 2011).

A relevant example is the modernization and rebranding of spa resorts – Băile Felix, Sovata, Covasna – which have redesigned their offerings to meet the demands of wellness and health tourism. Erdeli et al. (2011) point out that these destinations have become increasingly competitive through investments in modern treatment centers and accommodation infrastructure, coupled with road and airport accessibility. Thus, the link between medical, tourism, and transport infrastructure has become a prerequisite for regional attractiveness.

From a transport infrastructure perspective, the development of motorways and the modernization of regional airports (Cluj-Napoca, Iași, Oradea, Sibiu) have strengthened domestic and international connections, stimulating tourist flows. Pirvu et al. (2024) demonstrate that there are significant correlations between infrastructure quality and economic, social, and environmental indicators, confirming the strategic role of investments in transport and mobility. At the same time, the OECD (2022) points out that Romania still has some catching up to do compared to other European countries, especially in terms of digital infrastructure and adapting destinations to post-pandemic requirements.

The geographical distribution of tourism infrastructure remains uneven, concentrated in urban centers and a few established destinations. Cehan *et al.* (2019) show, through GIS analyses, that disparities between tourist regions accentuate polarization and reduce territorial cohesion. However, the experience of cities such as Oradea shows that an integrated strategy based on investments in urban, cultural, and digital infrastructure can transform a destination into a regional hub of attractiveness (Bogan, 2019).

A special case is the Oradea Metropolitan Area, where the tourism infrastructure is designed with a view to cooperation between urban and rural areas. The study conducted by Tătar *et al.* (2023) highlights the fact that metropolitan tourism integrates diverse resources – cultural heritage, rural leisure, wellness – into a coherent network, supported by transport and digital infrastructure. This approach reflects the European trend of polycentric planning, in which urban centers function as hubs for the surrounding areas.

Scientific literature also draws attention to the sustainable dimension of tourism infrastructure. Dumbrăveanu (2010) emphasizes that tourism planning must combine economic, social, and ecological principles to ensure the responsible use of resources and environmental protection. In this regard, investments in green energy, sustainable urban mobility, and environmentally friendly infrastructure are becoming priorities for long-term competitiveness.

In addition to physical infrastructure, the digital dimension is playing a central role in the evolution of tourism. The implementation of online platforms for promotion, booking, and management of tourist flows is a defining element in the modernization of the hospitality industry's soft infrastructure (Lequeux-Dincă et al., 2024). The COVID-19 pandemic has accelerated this transition, forcing destinations to adopt digital tools to maintain visibility and attract visitors (OECD, 2022).

A key aspect of tourism infrastructure dynamics is the role of public policies and the institutional framework. Cercleux et al. (2012) points out that urban regeneration in Romanian cities, including Oradea, was made possible by linking local strategies with European programs, which allowed for the financing of major heritage restoration and public space modernization projects. The OECD (2022) also points out that Romania must continue to invest in high value-added infrastructure – such as conference centers, business tourism facilities, and cultural infrastructure – in order to strengthen its position in the regional tourism market. This perspective shows that infrastructure is not only a technical support, but also a strategic tool for repositioning destinations.

Cultural and event tourism is another pillar of infrastructure development. Bogan (2020) shows that the success of urban destinations such as Oradea, Cluj-Napoca, and Brașov was due to investments in

festival venues, multipurpose halls, and museum infrastructure, which diversified the tourist offer and attracted segments of visitors with high levels of education and income. Lequeux-Dincă *et al.* (2025) emphasizes, in this context, the importance of digital and communication infrastructure for the international promotion of events, showing that the global visibility of destinations is directly proportional to the quality of online platforms and digital marketing tools. Therefore, cultural and digital infrastructure complement each other, becoming a major resource for the development of urban tourism.

With regard to future prospects, the literature emphasizes the need to adapt tourism infrastructure to the principles of sustainability. Dumbrăveanu (2010) shows that responsible tourism planning involves integrating the ecological dimension into all stages of development, from the design of green transport and energy-efficient accommodation to the creation of environmentally friendly public spaces. Pirvu *et al.* (2024) confirm this direction, demonstrating that investments in sustainable infrastructure generate positive effects not only in economic terms, but also in terms of social cohesion and quality of life. At the same time, Cehan *et al.* (2019) point out that reducing territorial disparities remains a major challenge, requiring integrated policies that support both urban centers and peripheral or rural areas. This orientation indicates that the dynamics of tourism infrastructure in Romania are in a process of maturation, in which the economic, social, and ecological dimensions must be coherently correlated.

The dynamics of Romania's tourism infrastructure show a shift from decline and stagnation in the 1990s to modernization and diversification in the last two decades. Transport, spa, cultural, and digital infrastructure have gradually become interconnected, reflecting both the influence of European policies and local initiatives. At the same time, the literature shows that the success of destinations depends not only on material investments, but also on the integration of social and environmental dimensions, confirming the transition to a sustainable and competitive tourism model. Romania is still in a process of catching up with other European countries, but successful experiences in certain regions indicate clear directions for the long-term development and consolidation of tourism infrastructure.

3. Methodology

The methodology of this study was mainly based on descriptive quantitative statistical methods (for the analysis of data obtained from official sources, in particular from the Tempo Online platform, managed by the National Institute of Statistics - INS). Methods were suitable for identifying and characterizing long-term trends and developments in the field of tourism, as it allows for an objective and systematic approach to the available statistical data. The data collected from Tempo Online refers to relevant indicators such as the number of tourists staying in accommodation units in Oradea, their structure by type of tourism (spa, business, cultural, etc.), the average length of stay, the evolution of the number of accommodation units and their occupancy over several years. This information was extracted from tourism reports and surveys conducted by the National Institute of Statistics (INS), which provide an overview of the dynamics of the tourism sector in the municipality. Using quantitative descriptive methods, we analyzed this data to observe changes in the structure and volume of tourism in Oradea, identifying the main trends and correlations between the evolution of tourism infrastructure and fluctuations in visitor numbers. The results obtained through this method will be interpreted in the context of recent economic and urban developments in the municipality of Oradea, with the aim of highlighting the impact of infrastructure development and diversification of tourism offerings on attracting tourists.

The extracted data was also used to calculate certain tourism demand infrastructure indices, such as:

1. Average length of stay – To calculate this indicator, data representing the number of overnight stays and the number of arrivals in the North-West Development Region, in Bihor County, and in Oradea Municipality were used. The codes of employed INS indicators are TUR104B, TUR104E, TUR105D, and TUR105E.
2. Accommodation capacity utilization index – To calculate this indicator, data collected and processed represented the number of overnight stays and the existing tourist accommodation capacity in the North-West Development Region, Bihor County, and Oradea

Municipality – INS indicators TUR105D, TUR105E, TUR103B, and TUR103D.

The data was analyzed quantitatively for the period 1990-2023, showing the evolution of this field in the post-communist period, while for qualitative data planning strategic documents covering continuous but different time horizons were considered. The analysis of the strategy documents was carried out by highlighting the chapter dedicated to tourism both as text (chapter break - strategic directions pursued for this area) and as a share of direct and indirect investments made in the two-time horizons (2017-2023, 2021-2027) for the tourism sector.

4. Results and discussion

4.1. Evolving trends of main tourism indicators for tourism infrastructure in Oradea Municipality

Comparing evolving trends of main tourism indicators for Oradea Municipality they mainly show steady continuous growth for this city compared to regional sudden high increase at regional level (for the North-West Region) and with stabilisation and/or lower increase at NUTS 3 level for Bihor county.

For the accommodation capacity Oradea registered a significant decrease in the number of accommodation places, from 912 in 1990 to 763 in 2000. This reduction may indicate a decrease in investment in tourism infrastructure generating a decline in tourist demand and a general decrease of tourism stays of tourist arrivals for urban tourism in the early post-communist Romania. Between 2000 and 2010, the situation remained relatively stable, but growth became evident from 2010 onwards, when capacity reached 1,254 places (Figure 1). The year 2015 marks a significant increase, with the number of places rising to 2,514, suggesting a period of accelerated development of the tourist infrastructure in Oradea. After this point, between 2015 and 2023, there is a moderate but steady increase. In 2019, capacity reached 2,733 places, followed by

minor fluctuations, and in 2023, the number of accommodation places peaked at 3,076.

This evolution reflects a general trend of development and consolidation of the tourism sector in Oradea, with increased attention paid to creating a tourism infrastructure capable of supporting growing demand. The results in 2023 highlight the success of local initiatives and the growing interest in tourism in this area.

In the North-West Region, there has been a significant increase in accommodation capacity during the analyzed period, suggesting increased attention to regional tourism infrastructure, along with growing interest in tourism. In the case of Bihor County, accommodation capacity has seen a more modest but steady increase (Figure 2). The North-West Region has experienced extensive tourism development, benefiting from its diversity and size.

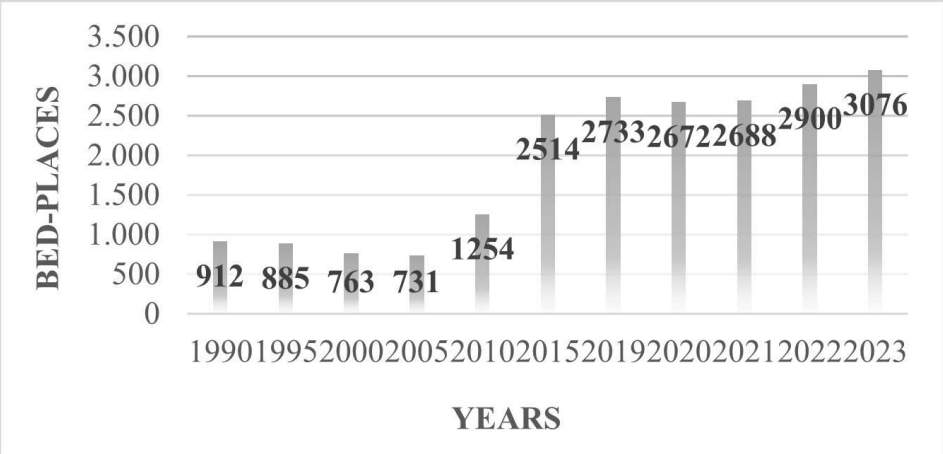

Figure 1. The evolution of accommodation capacity (number of structures) between 1990 and 2023 in Oradea
(Data source: INS)

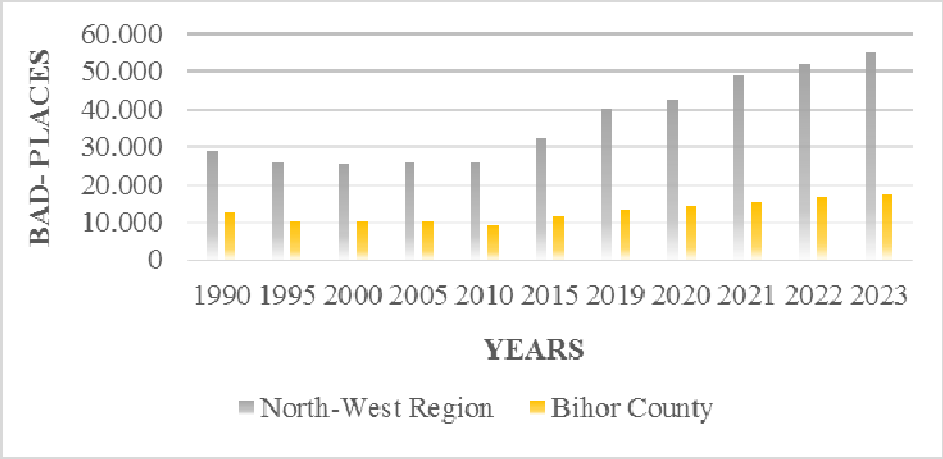

Figure 2. Existing accommodation capacity in Bihor County and North-West Region (Data source: INS)

With regard to the evolution of accommodation capacity on types of accommodation units, in the municipality of Oradea hotels stand out, with the number of available places following a downward trend between 1990 and 2005, from 912 to 683 places, followed by a significant increase, reaching 2,112 places in 2023. This dynamic highlights the impact of investments made in tourism infrastructure, especially after 2010, when values almost doubled compared to the beginning of the analyzed period. More typical and adapted for rural areas, tourist guesthouses only appeared as a type of structure after 2005, experiencing however a gradual expansion from 8 places in 2005 to 259 in 2022, followed by a slight stabilization. Their development reflects the diversification of tourist demand and consumers' orientation towards personalized services and urban-rural experiences.

4.2. Evolving trends of main tourism indicators for tourism demand in Oradea Municipality

For the evolution of tourism arrivals in North-West Regions and Bihor County between 1990 and 2023, figure 3 exemplifies the number of tourist arrivals in tourist accommodation structures in the North-West Region and Bihor County between 1990 and 2023. One could remark that there is

a general upward trend in the number of tourists at regional level with a significant peak in 2019 when the number of tourists exceeded 2 million. After a sharp decline in 2020, caused by the COVID-19 pandemic, the number of tourists is rising again in 2021 and remains high until 2023. In Bihor County (yellow bars), although the number of tourists is much lower than the regional average, it follows a similar trend. The increase is visible in the years leading up to the pandemic, and the post-pandemic recovery is moderate, reaching approximately 400,000 arrivals in 2023.

For Oradea, the growth is even more evident. Between 2005 and 2019, the number of tourists increased almost four times, reaching a maximum of 236,793 arrivals in 2019. The COVID-19 pandemic had a significant negative impact, reducing to 113,122 the number of tourists in 2020, almost half of the 2019 figure. Since 2021, there has been a gradual recovery, with steady growth until 2023, when arrivals reach 232,783, almost the maximum level recorded before the pandemic (Figure 4).

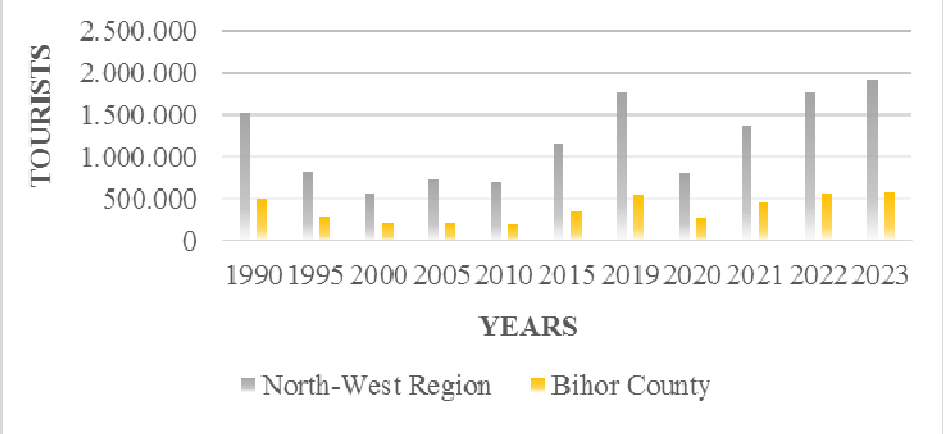

Figure 3. Tourist arrivals in Bihor County and North-West Region between 1990 and 2023 (Data source: INS)

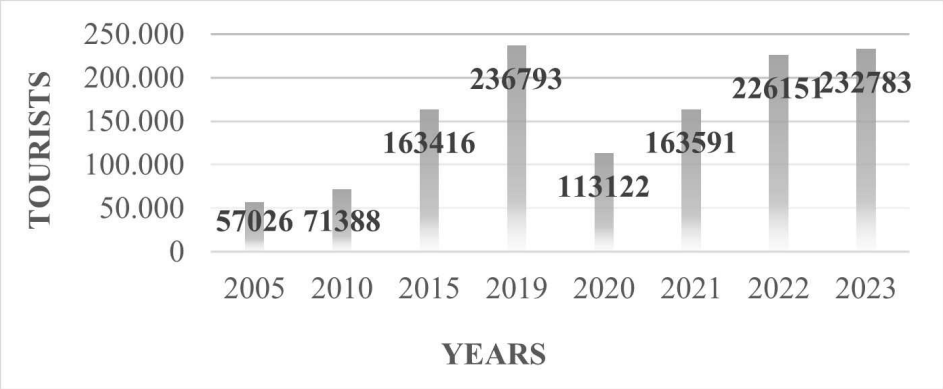

Figure 4. Tourist arrivals in Oradea between 2005 and 2023
(Data source: INS)

In terms of overnight stays in 1990, the North-West region recorded over 5,000,000 overnight stays, but this indicator fell significantly by 2000, stabilizing at values below 3,000,000. Since 2015, there has been a steady upward trend, with a decline caused by the COVID-19 pandemic followed by a return of this indicator to pre-pandemic levels. Bihor County followed a similar pattern, but with less pronounced fluctuations. Data from 2023 show a trend of consolidation at both regional and county levels, confirming the importance of tourism in this area (Figure 5).

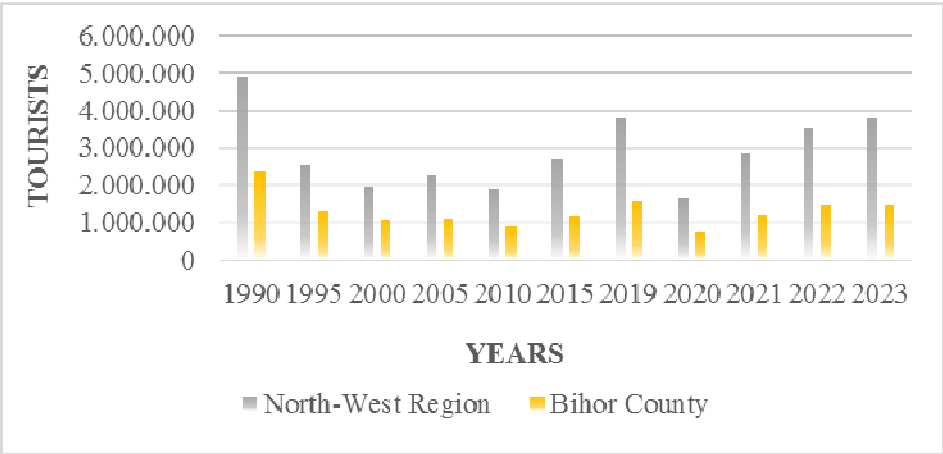

Figure 5. Overnight stays between 1990 and 2023 in North-West Region and Bihor County
(Data source: INS)

The evolution of the same indicator for Oradea between 2005 and 2023, shows a long-term upward trend, with significant fluctuations in certain periods (Figure 6).

In 2005, the number of overnight stays was 93,712, and by 2010 it had increased to 119,362, indicating a slight increase in tourist interests in Oradea. In the following years, local tourism experienced rapid growth, reaching 360,432 overnight stays in 2015 and continuing to grow to a peak of 394,784 in 2019. This evolution reflects improvements in tourism infrastructure and services, as well as more intensive promotion of the city as a tourist destination.

However, 2020 saw a significant decline, with the number of overnight stays falling to 199,998 amid the COVID-19 pandemic and global travel restrictions. This sharp decline highlights the major impact that the pandemic has had on the tourism sector., a shock wave that globally hit hospitality industries (Gössling et al., 2020).

The evolution of the average length of stay for the three studied territorial levels for the North-West Region, Bihor County, and Oradea Municipality during the period 1990-2023 highlights significant differences between these categories, both in terms of levels and observed trends.

In the case of the North-West Region and the municipality of Oradea, the average length of stay was relatively constant throughout the period analysed, with moderate values. These are lower than those recorded in Bihor County, where the values are influenced by the impact of spa resorts, for which tourism with a minimum stay of 7 days and even longer stays specific to spa treatments (14 days) is dominant (Figure 7).

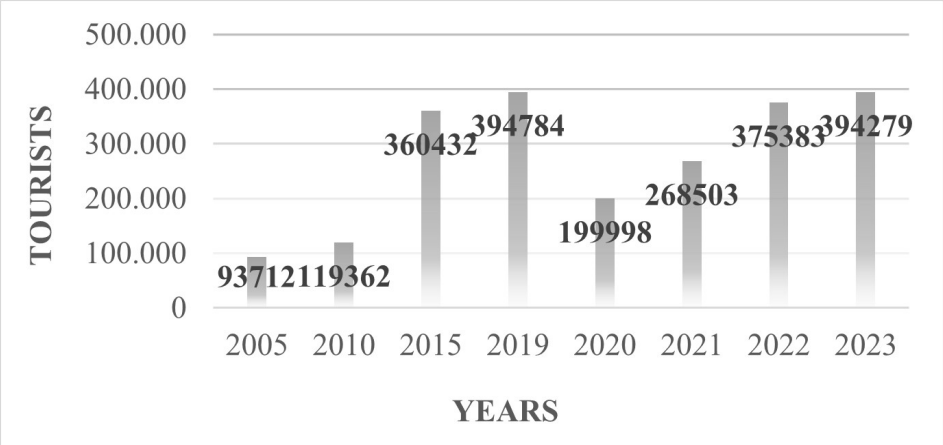

Figure 6. Overnight stays between 2005 and 2023 in Oradea (Data source: INS)

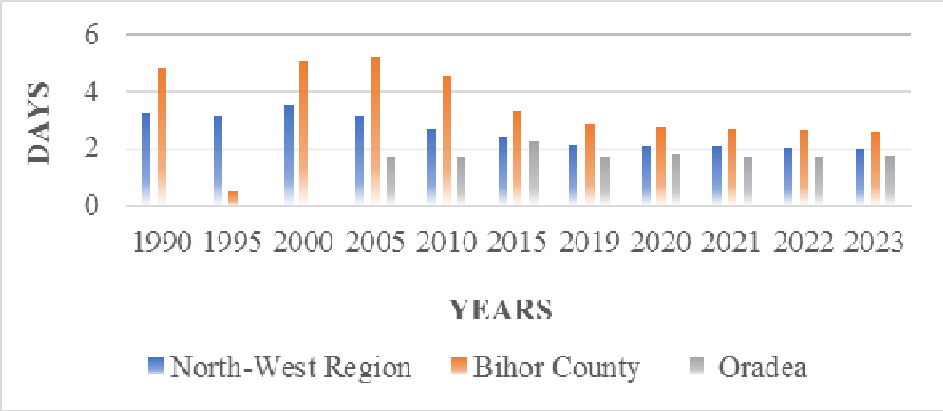

Figure 7. Average length of stay between 1990 and 2023, in Oradea, Bihor County and North-West Region (Data source: INS)

The values of net use indices of the tourist accommodation capacity in function between 1995-2023 show mainly the same evolutionary trends for the three studied territorial levels (Figure 8). Mainly evolutive statistics for this index show the fact that in the 1995s, Bihor County and the North-West Region had high and relatively similar levels of accommodation capacity usage, indicating a balanced distribution of tourist flows. However, since the 2000s, the municipality of Oradea has gradually taken the lead,

becoming the main tourist centre in the area. This change can be explained by the attraction of a larger number of tourists due to infrastructure modernization and effective promotion. In addition, the high utilization index values in Oradea in recent years suggest that this destination has managed to maximize its tourism potential, surpassing the county to which it belongs and as well the wider region.

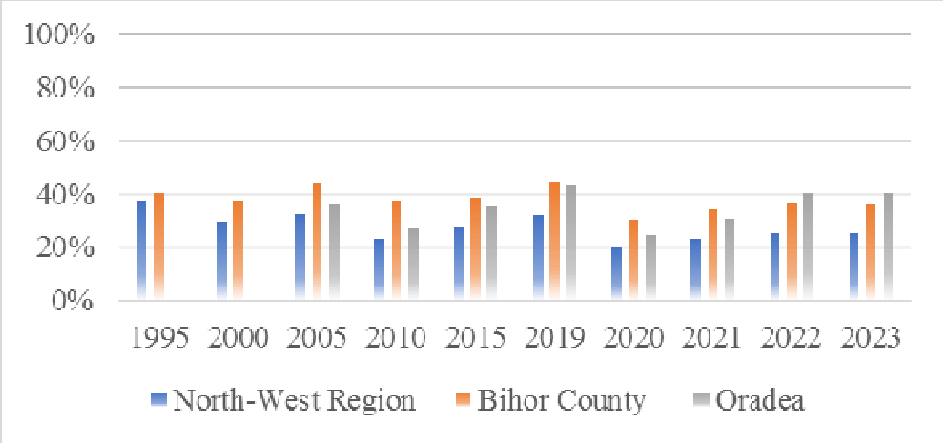

Figure 8. Net use indices of the tourist accommodation capacity in function between 1995-2023, in Oradea, Bihor County and North-West Region (Data source: INS)

Overall, the analysis of the accommodation capacity utilization index highlights a significant transformation in the tourism dynamics of the area. Although Bihor County and the North-West Region initially had an advantage, the municipality of Oradea has become the undisputed leader in accommodation capacity utilization, especially after 2015. This success can be attributed to a well-designed urban development and tourism promotion strategy, which has transformed Oradea into a favorite destination for visitors. Correlating this data with that on the average length of stay, it is clear that the city's attractiveness has increased significantly, and the accommodation capacity utilization index reflects this positive trend.

5. Conclusions

The evolution of tourism in Oradea reflects a complex development process, influenced by strategic investments in infrastructure, cultural heritage conservation, and diversification of tourist services. The analyzed data indicates a significant increase in accommodation capacity and its utilization rate, which highlights the city's increased attractiveness to tourists. At the same time, the modernization of transport infrastructure and the integration of the city into national and international tourism networks have contributed to strengthening Oradea's position as a regional tourist destination.

A key factor in this development was the promotion of the city as a tourist destination, both through the organization of cultural events and festivals and through the development of spa tourism, supported by the proximity of the Băile Felix resort. These initiatives have stimulated not only an increase in the number of visitors, but also an extension of their average length of stay.

The impact of the COVID-19 pandemic on the tourism sector has been significant, causing a sharp decline in the number of arrivals and overnight stays. However, recent data suggest a rapid recovery, supported by economic revitalization measures and adaptation to new tourism trends.

Overall, the analysis of tourism development in Oradea shows an upward trend, supported by coherent development policies and increased adaptability to economic and social changes. Consolidating this trend will depend on continued investment in infrastructure, innovation in tourism services, and maintaining an effective strategy for promoting the city on the national and international tourism market.

The results confirm that the development of accommodation infrastructure has had a direct impact on the evolution of tourist demand in the municipality of Oradea. The increase in the number of available places, the diversification of accommodation structures, and the modernization of hotel units have contributed to attracting an ever-increasing flow of visitors. This trend is supported by the high values of the accommodation capacity utilisation index, which demonstrates a clear correlation between the expansion of the hospitality infrastructure and the consolidation of the municipality's position in the regional tourism market. In addition,

the dynamics of arrivals and overnight stays confirm that investments in the hotel sector have led not only to an increase in the volume of tourists, but also to an improvement in the average length of stay, which is essential for the sustainable development of local tourism and a sign that the city has managed to become not only a transit destination but also an attraction for extended stays.

The analysis shows that the municipality of Oradea has experienced upward growth, becoming a regional tourist hub. Investments in infrastructure, transportation, and promotion have had a direct impact on the increase in visitor numbers. Overall, analyzed data confirms that tourism in Oradea is on an upward trend, with a positive impact on the local economy, thus highlighting the need to continue modernization and tourism promotion strategies aimed at consolidating the city's position as a destination of long-term interest.

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BALNEARY TOURISM TRENDS BEFORE AND AFTER COVID-19 PANDEMIC. CASE STUDY: BALNEARY RESORTS IN THE VÂLCEA SUBCARPATHIANS

Abstract. The tourist area of Vâlcea Subcarpathians includes numerous elements of the natural setting, ethnographic elements, historical and cultural aspects. The period 2019-2021 was marked by the Covid 19 pandemic, a particularly serious virus that affected all of humanity, including related economic activities. In the field of tourism, the Covid pandemic primarily affected tourist accommodation and public catering units and implicitly employees in the field. The particularly harsh restrictions resulted in high maintenance costs of the activity, the unemployment of employees, operation at reduced capacity and even the closure of some of the units (especially small units). Unfortunately, solutions were found for only a low percentage of these problems. The purpose of the study is to highlight the mineral potential of the region, the effects of the pandemic on accommodation capacity, but also on patients, as well as the measures that are being taken to remedy the existing situation. A series of indicators (economic and touristic) were analyzed, based on which an attempt was made to determine the degree of adaptability of the spa resorts to the changes that occurred in the context of the pandemic crisis, as well as what was the impact on tourist activities and spa treatment services.

Keywords: *balneary tourism, balneary resorts, Subcarpathians, tourist indicators, Covid 19*

1. Introduction

Tourism is one of the activities with a strong social and cultural impact, favouring intercultural exchanges, stimulating the development of infrastructure,

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while contributing to the preservation of world and national heritage. The aging of the global population determines an increase in demand for balneary tourism (Aluculesei & Nistoreanu, 2016, p. 538), while also having beneficial effects on both the economies of the world's countries and their societies (Noni, 2018, p. 28).

Balneary tourism is not only aimed at people with medical problems, but also at those who want to relax, or have a physical and mental condition. The concept of health, defined in a first form as a "state of physical, mental and social well-being" (World Health Organization, 1948), over time, has taken on various forms and dimensions (health, wellness, medical tourism) (Figure 1).

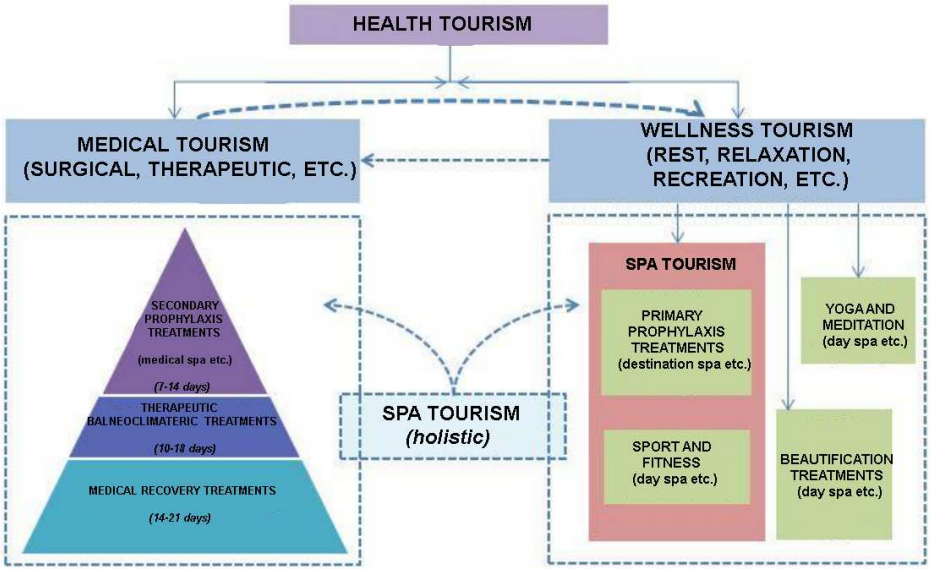

Figure 1. Dimensions of health tourism
(*Source:* Stăncioiu *et al.*, 2013, p. 126)

Although the term wellness has been used since the 17th century, the 21st century was a time when it was widely spread, a time when it became one of the most important industries around the globe (Diaconu, 2021, p. 64). Although it is found that the wellness consumer market is very large, its saturation level is still low (Knowledge Sourcing Intelligence LLP, 2020). According to studies, at an international level wellness

tourism is considered to be travel associated with the aim of maintaining or improving personal well-being (Wellness Tourism – Global Wellness Institute, 2025).

Regardless of the names it bears, balneary tourism is a form of tourism that involves the travel of people of different ages, to localities with balneary potential for cure, care or treatment (Gîrneț, 2018, p.154).

This is the reason why tourism has become an important segment in economic activities. It should not be overlooked that spa tourism, regardless of the name it bears, also involves other aspects such as the quality of mineral and thermal waters or their chemical composition or categories of conditions that can be analysed or treated.

2. General presentation of the area

Tourism is generally a component part of the service system, each change affecting this sector of activity.

If in European health systems, balneary resorts represent important tourist destinations for both health-seeking consumers and those seeking leisure, in Romania the balneary tourism product focuses either on traditional services – procedures and treatments specific to a certain condition (Kapczynski & Szromek, 2008, p. 115), or on highlighting the harmony between physical and mental health (Smith & Puczko, 2009, p. 5) or primary prophylactic treatments – preferred by healthy people who present risk factors and who pay special attention to their health (Teleki & Munteanu, 2012, p. 56).

Romania benefits from a high spa potential due to the natural resources present along the Carpathians, but the lack of infrastructure and limited promotion create shortcomings both for the tourist infrastructure and especially for consumers (Aluculesei & Nistoreanu, 2016, p. 547). At the level of the area, the use of natural factors has a long history, representing a preventive and curative practice (most often being subsidized by the state).

Hydrogeological research reveals the existence, at the level of the Vâlcea Subcarpathians, of important spa resources represented by numerous therapeutic mineral substances, but also beneficial climatic factors.

All these aspects have determined the highlighting of existing tourist services, which have certain particularities compared to other economic branches: they can only be evaluated after tourists have benefited from them, they cannot be delivered like other categories of services, the quantity and quality of tourist products are determined by tourist demand, being also influenced by the quality of goods delivered by related branches.

2.1. Structure of the existing balneary tourism potential at the area level

The Vâlcea Subcarpathians constitute an area with a notable potential from a spa point of view, especially through the diversity of mineral sources, both numerically and qualitatively. These resources are focused at the level of the 6 existing resorts, namely 3 resorts included in the international circuit (Băile Olănești, Băile Govora, Călimănești-Căciulata), 1 resort of national interest (Ocnele Mari), 2 localities of local interest (Costești and Sălătrucu). Unfortunately, the hydromineral sources existing at the level of the Sălătrucu locality (Argeș) were abandoned, with no development or maintenance operations, and over time they dried up.

The geological composition of the Vâlcea Subcarpathians is varied; at this level, the sedimentary formations are arranged in the form of strips oriented mostly west-east (Dinu, 1999, p. 36). It is worth noting that, at the contact with the mountain there is a series of depressions (Călimănești-Căciulata, Băile Olănești, Bărăbtești, Horezu, Pietrari, Costești), followed by a series of hills with heights ranging between 400-700 m (Pietrari, Păușești, Tomșani, Băile Govora, Ocnele Mari-Ocnița) (Treaty of Geography, 1992).

The existing balneotourism offer at the level of the area allows the treatment of a diversified range of ailments. If until 1990 the offer had an excessive extension, based on ensuring a considerable number of accommodation places, at affordable prices, currently the Vâlcea Subcarpathian resorts are included in international circuits, investments have been made to increase the quality of the balneal cure tourist product, the number of accommodation units has increased, and especially of the treatment bases both belonging to the accommodation units and individual ones.

An important characteristic of spa tourism is the existing spa tourism potential. At the level of the area, the 5 spa resorts have a variety of hydromineral sources, their qualities being exploited in internal cures, external cures, inhalation cures, injections, etc. (Table 1).

Table 1

The range of conditions that can be treated in the spa resorts of Vâlcea Subcarpathians

Resort	Hydromineral source	Treatment procedure	Range of conditions
Băile Olănești	Mineral waters	Injections	Rheumatic diseases
	Mineral waters	Vaginal irrigation	Allergic diseases
	Mineral waters	Internal cure	Diseases of the female genital tract
	Mineral waters	External cure	Renal, hepatic, gastrointestinal, digestive, respiratory, ENT diseases
Ocnele Mari	Therapeutic sapropelic muds	External cure	Diseases of the musculoskeletal system
Băile Govora		Poultice	
		Mud Wraps	
		Mud Baths	
Călimănești Căciulata	Mineral waters	Injections	Allergic diseases Rheumatic diseases Liver diseases
	Mineral waters	Internal cleansing baths	
	Mineral waters	Hot water installations	
	Mineral waters	Mud and paraffin wraps	
	Mineral waters	Dry massage	
	Mineral waters	Swimming pools	
	Mineral waters	Sauna	
Băile Govora	Mineral waters	Hot baths	Renal, digestive, metabolic, respiratory diseases
	Sapropelic mineral mud	Wraps	Diseases of the musculoskeletal system, peripheral nervous system, chronic genital diseases, thyroid gland diseases
Ocnele Mari Ocnița	Mineral waters	Hot water baths	Gynecological diseases
	Mud	Tubs	Diseases of the respiratory system, Diseases of the musculoskeletal system
	Saline	Treatment pools	Respiratory diseases

Costești	Mineral waters	Cold mud baths followed by lake baths	Diseases of the musculoskeletal system, allergic diseases, liver diseases

Source: field data processing

2.2. Global and local pandemic situation

In December 2019, an epidemic (Covid-19) broke out in a small town in China, which quickly spread across the globe. Worldwide, the Covid-19 pandemic had a disastrous effect on tourism, causing revenue declines of approximately 50%, respectively 20% job losses in 2020 (Bacsi, Kovacs & Loke, 2024, p. 1). Studies highlight that a pandemic can leave deep traces in the thinking and feelings of tourists and can also change the way they travel (Zenker & Kock, 2020, p. 2).

In Romania, the first case appeared in February 2020 and because the effects were very serious, and the number of cases was multiplying, the first measures imposed by the authorities soon appeared. These are a series of legislative, medical and administrative measures. We recall:

a. *legislative measures*

- February 2020 – issuing of an Order of the Ministry of Health for the establishment of quarantine measures in emergency situations;
- March 16, 2020 – the President of Romania signed a presidential decree establishing a state of emergency;
- March 17, 2020 – the first Military Ordinance was issued regarding some first emergency measures;
- March 2020 – March 2022 – 7 other military ordinances were issued imposing strict rules regarding the population's access to various public spaces.
- 2021 – the state of emergency was replaced by a state of alert (which came with the decongestion of certain measures regarding the population's access).
- March 2022 – mandatory measures became recommendations following the end of the state of alert.

b. *administrative measures*

- an interministerial committee was established to monitor cases of infection at the national level;
- establishment of the quarantine measure (by Ministerial Order);
- prohibition of public or private events, etc.

c. *medical measures*

- a vaccination campaign against Covid-19 has begun;
- medical units that treat infected patients, as well as the main regional centres, have been designated. Later, their number expanded to include all major cities.
- installation of thermal scanners to check body temperature (over 380 constitutes a risk of infection);
- permanence has been ensured in all medical centres etc.

At the national level, the pandemic had major effects on all levels, affecting all economic sectors, including tourism. The establishment of measures imposed by military ordinances led to major decreases in tourist flows at the national level, implicitly at the level of the analysed area. There were also decreases in tourism revenues, major layoffs and even closures of accommodation units. Many economic agents sought solutions to comply with the legislation, but also to ensure a minimum of services to tourists (see analysis Subchapter 4.1.).

First, as in the existing situations at a global level (Cashdanm & Steele, 2013) tourists began to develop a fear of pathogens, avoiding unknown places (Zenker & Kock, 2020, p. 4), then a change in travel behaviour is observed by avoiding overcrowded areas (Wang & Ackerman, 2019), but also a trend to select domestic destinations to the disadvantage of foreign ones (see analysis subchapter 4.1.).

3. Methodology

In order to ascertain the impact generated by the Covid 19 pandemic on the tourism market, an evaluation of it is necessary, an evaluation that takes into account the presentation of existing tourism products in the area under analysis.

For this, extensive research was carried out that targeted two aspects: a statistical analysis, as well as the development of an impact study and the monitoring of consumer behaviour. The statistical analysis consisted of a comparative study of indicators that target tourism development (number of tourists, number of arrivals and number of overnight stays compared to existing accommodation capacity), indicators that also characterize existing problems at the local level. On the other hand, an attempt was made to carry out an impact study that also included tourists' perception of the quality of spa tourism products, generating a problematization of them in the ante and post covid period, but also monitoring consumer behaviour. For this, opinion polls were conducted among tourists regarding consumption behaviour and travel intentions. The surveys were conducted on a number of 120 respondents, during the reference period July-August 2022 and July-August 2024, respectively, periods with a high tourist flow due to the predominantly seasonal nature of these resorts.

4. Results

The pandemic has reduced consumer preferences for international tourism in favour of domestic tourism. In order to monitor the effects and level of sustainable tourism development from a qualitative point of view, the following factors were analysed: 1. The level of tourism reflected in both demand and tourist supply; 2. The profile and level of satisfaction of tourists.

4.1. Analysis of the tourist supply

The balneal tourist supply is particularly varied in the area under analysis, also due to the fact that of the 5 resorts, 3 are permanent resorts at which the tourist flow is high.

Among the most important tourist indicators, we mention: accommodation units, accommodation capacity (number of places in units), the number of tourists visiting the analysed destination, number of overnight stays.

During the period 2019-2024, according to the analysis carried out at the level of the spa resorts in the Subcarpathian Valley, the curve is continuously increasing, with the exception of 2020 when there was a decrease in the number of accommodation units. The cause of this decrease is the Covid pandemic, namely the drastic measures to restrict access (Figure 2).

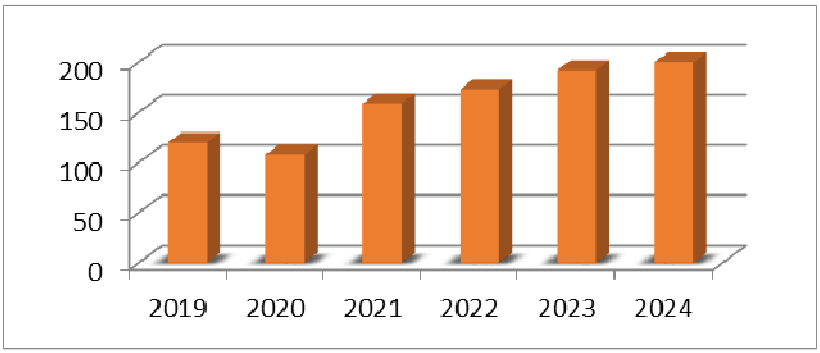

Figure 2. Evolution of the number of accommodation units
at the level of spa resorts in Vâlcea Subcarpathians
(*Source*: INS data processing)

Regarding accommodation capacity (number of places in accommodation units) the situation is the same with progressive increases, except for 2020 (Figure 3).

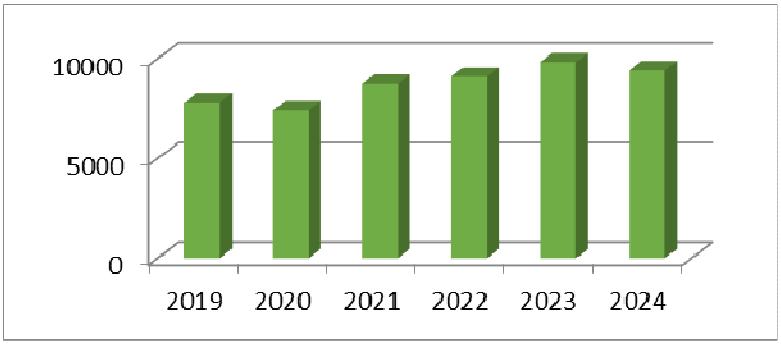

Figure 3. Evolution of accommodation capacity
at the level of spa resorts in Vâlcea Subcarpathians
(*Source*: INS data processing)

The evolution of the number of arrivals was the most affected. Although the curve is increasing overall, the year 2020 marked the tourism industry at the area level. The drastic measures materialized in the decrease in the number of arrivals and overnight stays (Figures 4 and 5), due to the limitation of access to tourist activities, the decrease in the number of accessible places, and even the closure of some of the small accommodation units (which could not cope financially).

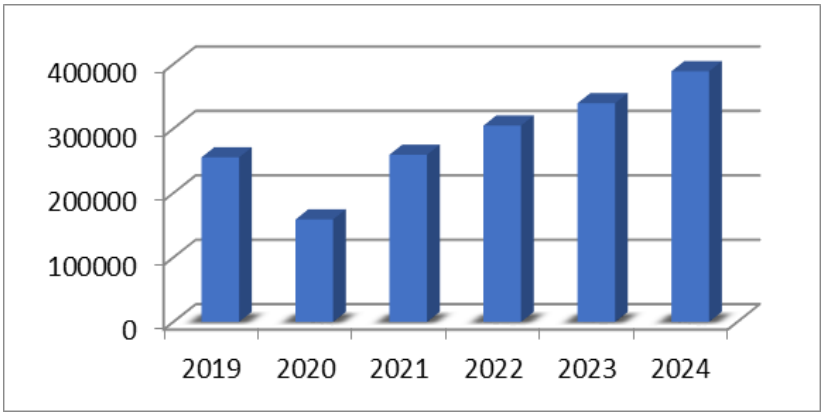

Figure 4. Evolution of the number of arrivals at the spa resorts in Vâlcea Subcarpathians (*Source*: INS data processing)

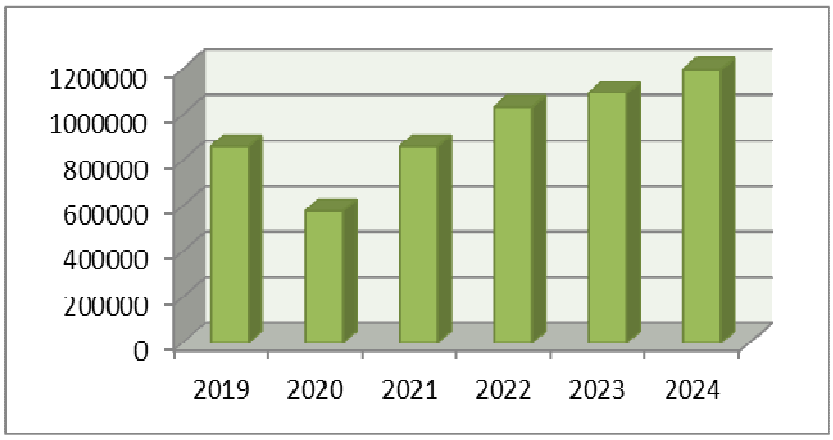

Figure 5. Evolution of the number of overnight stays at the spa resorts in Vâlcea Subcarpathians (*Source*: INS data processing)

4.2. Tourist satisfaction level

The research was conducted on a sample of 120 respondents, tourists staying in the spa resorts in Vâlcea County (e.g. Băile Olănești, Călimănești-Căciulata, Govora). The sample was selected by simple random method, respecting the criteria of demographic diversity (age, gender, geographical origin).

It was observed how the outline of the specific activities of balneary tourism products are perceived by consumers, but also the relationship they have with the quality of services.

To interpret the data, we conducted a descriptive analysis based on destination preferences, the motivation for choosing it or the degree of satisfaction. We found that 45% of respondents indicated Băile Olănești as their preferred destination, followed by Călimănești-Căciulata (35%) and Govora (20%). Also, regarding the motivation for choice, 60% mentioned spa treatments, 25% relaxation, and 15% the natural landscape, resulting in a 72% satisfaction rate with the services received in 2022, compared to 52% in 2024 (Figure 6).

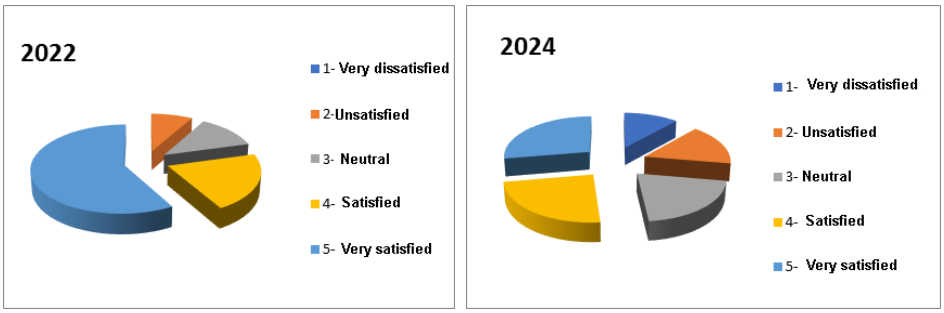

Figure 6. Tourists' perceptions regarding the degree of satisfaction with the quality of services in the balneary resorts in Vâlcea Subcarpathians (*Source*: questionnaire data processing)

In a comparative analysis of 2024 compared to 2022 (when the national state of alert ended), a change in the purpose of the trip can be observed, the cause being clearly the Covid 19 pandemic. Thus, the majority of respondents who visited the analysed area had as their purpose in 2022

recovery from an illness (37.6%), while in 2024 they focused on prevention (37.5%). The lowest values appear in the case of indicators focused on relaxation (6.7% in 2024) and only 5.8% rest (Figure 7).

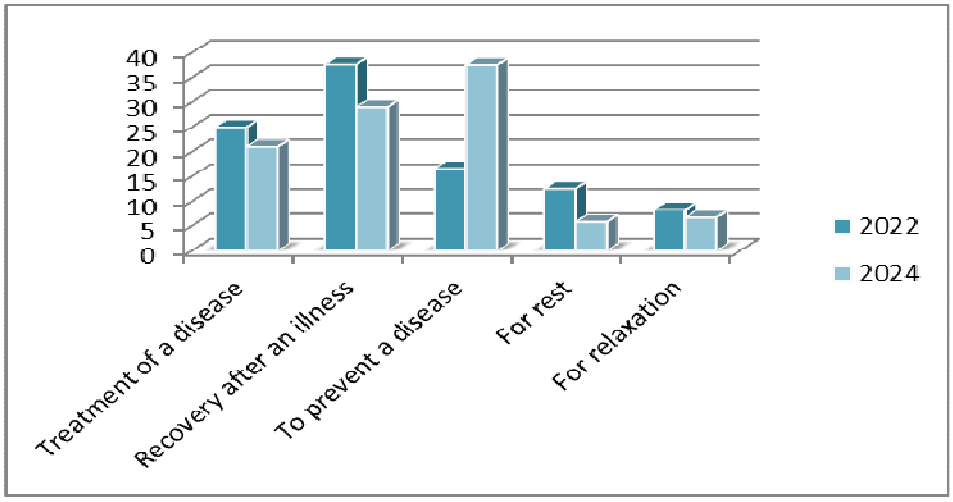

Figure 7. Reasons for visiting the spa resorts in Vâlcea Subcarpathians
(*Source*: questionnaire data processing)

The spa resorts in Vâlcea Subcarpathians allow stays in all seasons (4 out of 6 resorts), most of them being permanent resorts. This is important on the one hand for establishing the main quantitative and qualitative indicators (see Subchapter 4.1.), and on the other hand for establishing their degree of satisfaction with accommodation, food and treatment services.

The results show an important role in combining the 3 aspects, treatment, accommodation and food. Since in 2024, 41% of respondents consider that the food in the spa resorts in Vâlcea County is ordinary, 23% tasteless and only 12% of quality (Figure 8) special attention is required from the economic agents involved.

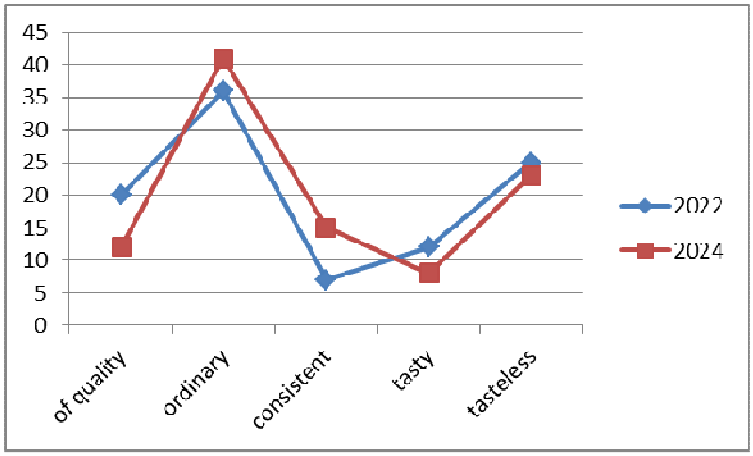

Figure 8. Tourists' perceptions of food services in the spa resorts of the Subcarpathian Valley (*Source*: questionnaire data processing)

The appearance and quality of food services, along with accommodation, play a significant role in the analysis of consumer perception. Thus, the Vâlcea spa resorts are considered largely outdated (over 70% of respondents) rather than modern (26%). According to the results, the respondents classified the Ocnele Mari resort between outdated and modern, both in terms of accommodation and treatment facilities. The justification is based on the high degree of obsolescence of the furniture, as well as partially modernized services or treatment facilities. An analysis of the same indicator could classify the resorts according to the modernization of the accommodation and treatment facilities (Table 2).

Table 2

The degree of modernization of the accommodation and treatment base in the spa resorts of the Vâlcea Subcarpathians

Resort	Accommodation base		Treatment base	
	Outdated	Modern	Outdated	Modern
Călimănești Căciulata		X		
Băile Olănești		X		X
Băile Govora	X			X
Ocnele Mari	X	X	X	X
Costești	X		X	

Source: questionnaire data processing

In addition to accommodation facilities, treatment facilities are important elements of the spa services package. The range of spa services related to the resorts analysed is rich, patients can benefit from therapy and recovery assistance, depending on the need and the range of conditions that can be treated at the level of each resort (see Subchapter 2.1.).

At the same time, the balneary resorts in the Vâlcea Subcarpathians have treatment facilities equipped with balneotherapy facilities, crenotherapy pools, climatic therapy facilities, hydro- and thermotherapy facilities, etc. (Roangheș-Mureanu, 2012, p. 175).

These treatment facilities operate under the supervision of specialized medical personnel, with modernized equipment, and are dedicated to performing recovery, therapy or prevention treatments. The treatments are based on mineral waters, with a diverse chemical composition: sulphurous, bicarbonate, sulphated, sodium, calcium, magnesium, chlorinated, iodized, etc. (Pricăjan, 1985; Teleki *et al.*, 2004).

During the pandemic, CNPP suspended the activities of issuing spa treatment tickets, as well as the stay of pensioners already undergoing treatment, but also for the entire period of the state of emergency. For the uncovered/unused period, the respective amounts of money were refunded.

Subsequently, the activities gradually resumed, covering the maximum accommodation and treatment capacity.

5. Conclusions

In a society in which there is a continuous evolution and where there is always pressure on citizens, special attention is required to the health aspects of the population. Regardless of the aspect from which the balneal treatment is viewed (recuperative or preventive), a promotion of this economic branch is necessary, but also a series of concrete actions that directly and indirectly influence the tourist activity, while supporting this economic side.

The spa resorts of Vâlcea County are perceived positively, especially for the therapeutic benefits offered by the natural resources (mineral waters, clean air, mud). The results of the analysis highlight the perception of tourists towards the spa resorts of Vâlcea as being attractive especially

for treatments and relaxation, less for fun and leisure. This is also due to the purpose of the trip. Tourists over 60 preferred destinations with a therapeutic profile in a proportion of 80%, while those under 40 were more attracted by the relaxation and wellness component.

Given the situation during the pandemic, many structures have sought viable solutions that would satisfy legislative requirements, but also those of tourists. These solutions referred to: reducing access to certain treatment facilities, establishing the maximum number of visitors, creating a traffic lane to food or treatment facilities, limiting the duration of stay or limiting the duration of parking. These measures were applied in order to reduce the impact generated by the pandemic, an impact that had strong effects both on the local economy and especially on the population (thus avoiding major layoffs or even the closure of the respective units).

However, the pandemic period has demonstrated that in a period of crisis, at the national level there is no strategic plan to stand by or support tourists, especially since there is the possibility of medical consequences resulting from a pandemic.

It is also recommended to modernize the spa infrastructure in all resorts, to promote the resorts both online and at international fairs, to create thematic tourist packages (which combine treatments with cultural activities and ecotourism), etc.

Following the research conducted in the spa resorts in Vâlcea County, the following conclusions can be drawn: consumer behaviour has adapted to the health context, with differences in perception depending on age, education and tourist experience, but the Covid 19 pandemic has generated a reassessment of the value of local spa tourism, as a sustainable alternative for recreation and prevention.

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Constantin-Răzvan OPREA[1]

REMISE DU TITRE DE PROFESSEUR HONORIS CAUSA AU PROFESSEUR CHAOUKI BENABBAS DE L'UNIVERSITÉ « CONSTANTIN 3 »

L'Université de Bucarest a décerné, lors d'une cérémonie qui a eu lieu le jeudi 3 avril 2025, le titre de Professeur Honoris Causa au Professeur des universités Chaouki Benabbas, vice-recteur responsable des Relations Internationales et de la Coopération à l'Université Constantin 3 Salah BOUBNIDER de l'Algérie.

L'événement s'est déroulé à partir de 10h00 dans l'Amphithéâtre « George Vâlsan » de la Faculté de Géographie de l'Université de Bucarest. À l'occasion de cette cérémonie, le professeur Chaouki Benabbas a présenté la conférence **Apport de la morpho-géologie dans l'étude des processus gravitaires**.

En tant que chercheur, le professeur Benabbas s'est remarqué par ses contributions significatives dans le domaine de la gestion de l'environnement et des risques naturels. Par ailleurs, Chaouki Benabbas est également professeur à l'Institut de Gestion des Techniques Urbaines de la même université. De plus, le professeur Benabbas a contribué à l'organisation et a participé à de nombreux colloques et conférences internationales, abordant des thématiques telles que la vulnérabilité des territoires, la prévention et l'adaptation aux risques naturels.

[1] Directeur du Département de Géomorphologie – Pédologie – Géomatique, Faculté de Géographie, Université de Bucarest ; e-mail : <constantin.oprea@geo.unibuc.ro>.

Par son activité didactique et de recherche et son implication dans des projets internationaux, le professeur des universités Chaouki Benabbas apporte une contribution appréciable au développement et à la promotion de la coopération académique internationale, renforçant ainsi le prestige de l'Université « Constantin 3 » dans la communauté scientifique mondiale.

L'attribution du titre de Professeur Honoris Causa par l'Université de Bucarest au professeur Chaouki Benabbas est un signe de reconnaissance pour ses contributions exceptionnelles au progrès scientifique international, consolidant ainsi les liens entre l'Université de Bucarest et la communauté académique globale.

L'événement s'est déroulé dans les meilleures conditions, en présence d'un large public. La séance a été dirigée par le doyen de la Faculté de Géographie, Professeur des universités Alexandru Nedelea. La présentation de l'invité, Professeur des universités Chaouki Benabbas, ainsi que de ses contributions académiques, a été faite par le directeur du Département de Géomorphologie, Pédologie et Géomatique, Maître de conférences Dr. Constantin-Răzvan Oprea. Ensuite, l'invité a reçu le Diplôme de PHC et un cadeau, en signe d'estime, de la part de l'Université de Bucarest.

Professeur des universités Chaouki Benabbas a soutenu la conférence *Apport de la morpho-géologie dans l'étude des processus gravitaires*. Parmi les invités figurait également **Professeur des universités émérite Florina Grecu**, qui a eu un rôle de grande importance dans la création et le maintien du partenariat universitaire roumano-algérien et qui a même fait un court discours.

À la fin, des félicitations et des photos de groupe ont complété l'événement. Le professeur des universités Chaouki Benabbas a signé dans le Livre d'Or de la Faculté de Géographie et des discussions ont eu lieu concernant la poursuite et le développement du partenariat entre les deux institutions.

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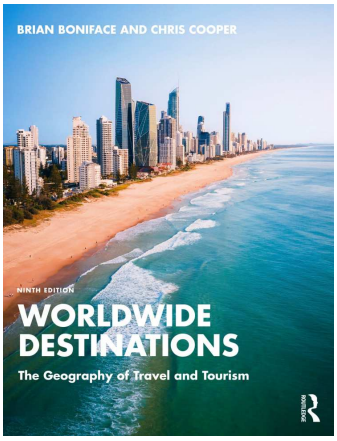
Gabriel CAMARĂ[1]

Brian Boniface and Chris Cooper (2024). ***Worldwide Destinations: The Geography of Travel and Tourism (Ninth Edition)***. Routledge, London and New York, 818 p. ISBN 9781032524917



Studying the world's tourism demand, supply, organization, and resources for every country worldwide in a single book seems an unrealistic task because it is simply too much to do. The world is so big and the tourism phenomenon is so complex that it is almost impossible to describe and analyze them in a single book. There are some scientific books in this area with the same aim, but, given the immensity of the field, they are either theoretical or offer rather summaries of the world's tourism resources.

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However, Brian Boniface and Chris Cooper tried to do the impossible, because their book does not offer a purely theoretical perspective only or a description of the tourism resources (which is difficult even for a single country), but their unique text explores all, putting into context tourism demand, supply, organization, and resources for every country worldwide.

The authors mention that their approach is meant to fill a gap in the tourism geography literature: "While the scope of tourism is widening, at the same time, the focus on tourism is becoming narrower, with most authors specialising in ever-smaller areas of the subject, and with very few geographers taking a comprehensive and popular market approach to travel and tourism. As in previous editions, we aim to fill this gap in the market" (p. xiii).

Given the immensity of the field mentioned above, *Worldwide Destinations: The Geography of Travel and Tourism* is now at its ninth edition (and expanded to over 800 pages), because always new things and perspectives can be added. The book cannot pretend to be exhaustive, and every reader from every country could have suggestions to improve the section dedicated to the respective country; it also does not contain maps and relevant images, although the text could allow many. However, it uses an accessible language and many case studies, charts, and tables that help to understand the text and it remains among the most valuable resources in the field of tourism geography, very useful for scholars and students (the third part of the book contains online resources for lecturers and students including PPTs, web links, video links, and discussion questions), but also for tourism planners and policy professionals which can have an overview of the tourist context. The new and updated case studies throughout the book highlight the content of the respective chapters and help greatly to develop further reflections on the content.

As the authors mention (p. xiii), in this edition, they have retained many of the ingredients of previous successful editions and highlighted current themes such as global and long-term threats to peace, stability, and growth posed by the Ukrainian war, the climate change and the impact of the COVID-19 pandemic in certain countries, with subsequent recovery strategies, changes in consumer behavior, and sustainability. They have endeavored to place less emphasis on Europe and given more space to emerging destinations, including South America and countries in

sub-Saharan Africa. Due to the increasing number of tourists in Antarctica, the authors included a new chapter focusing on the tourism geography of the white continent.

The book is organized into three parts. The first two parts include 27 chapters, which contain almost the entire book, while the third part is a short chapter that provides a list of useful sources to support work on worldwide destinations: academic books, dictionaries, encyclopedias, statistical sources, reports, etc.

The first part, *The geographical principles of travel and tourism*, (chapters 1-5), comprises thematic chapters that detail the geographic knowledge and principles required to analyze the tourism appeal of destinations; it presents the geography of demand, resources, and the transport for travel and tourism. This part is almost a book itself (127 pages) which deals with definitions of concepts and the calculus to illustrate the theory, such as the travel propensity, tourism planning, and carrying capacity.

The second part, *The regional geography of travel and tourism* (chapters 6-27, from pages 129 to 777), is the most extensive, and half of it is dedicated to Europe, as the first international tourist destination; however, the length of the chapters varies, probably due to the linguistic facilities or obstacles: for example, almost 60 pages are dedicated to Britain, while France, the first tourist destination in the world, has less than 30. This part contains regional chapters that generally describe the setting for tourism and analyses the major physical and cultural features of the continents/regions, the impact of climatic differences on the flow of tourists, and regional differences. The chapters that deal with the countries have generally the same structure: the physical and social setting for tourism, the demand for tourism, the supply of tourism, and tourism resources. There are also little sections with practical educational purposes, *Discussion point*.

This volume is a must-have for any scholar and student in tourism geography and even for non-specialists with interests in this field, since it studies every destination in the world, explaining tourism demand, evaluating the many types of tourist attractions, and examining the trends that may shape the future geography of tourism.

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Ana Maria ZAHARIA (TALOȘ)[1]

THE 3RD INTERNATIONAL CONFERENCE ON RE-SHAPING TERRITORIES, ENVIRONMENT AND SOCIETIES: NEW CHALLENGES FOR GEOGRAPHY, NOVEMBER 15-16, 2024, BUCHAREST, ROMANIA

The year 2024 marked 160 years since the University of Bucharest was founded and 330 years of higher education in Bucharest. Considering this important landmark and after the success of the first edition organized in 2016 and the second edition from 2020, the Department of Human and Economic Geography, under the coordination of prof. Liliana Dumitrache, held the 3rd International Conference "Re-shaping Territories, Environment and Societies – New Challenges for Geography" (ReTES) which took place on November 15th-16st, 2024. Similar to previous editions, the organizers aimed to bring together as many members of the academic community as possible. Also, in the second day of the conference, were organized two guided tours for the participants: a visit at The Old Town and The Palace of Parliament, and a visit at The Village Museum and The New Bucharest.

The event was attended by 150 professors, researchers, experts, specialists, PhD students or students who presented 92 papers during the 3rd International

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Conference "Re-shaping Territories, Environment and Societies – New Challenges for Geography" (ReTES). The participants represented various university centers from Romania (Bucharest, Timișoara, Cluj Napoca, Craiova, Iași), but also from other European countries (France, Germany, Italy).

The conference was opened by the Dean of the Faculty of Geography – prof. Alexandru Nedelea, the Vice-Dean of the Faculty of Geography – prof. Mioara Clius and by the Head of the Department of Human and Economic Geography – prof. Liliana Dumitrache. The two invited key speakers shared with the participants their research results: from University of Tübingen, Germany – Prof. Olaf KÜHNE introduced the neopragmatist redescription of regional geography, and from University Roma Tre, Italy – Prof. Pasquale BORRELLI discussed about forces of nature, soil erosion, and land degradation in Europe.

The conference was structured in five main pillars (Physical and Human Landscapes in Urban and Rural Areas; Weather, Water and Climate: living sustainable, spatial disparities and persisting divisions; Ecosystems, Biodiversity and Sustainable Resource Management: concentrations, convergence and integration; Geography, Globalization and Smart Development and Teaching Geography: Trends, Frontiers and Barriers), and three workshops (GeoHealth Nexus: Addressing Progress, Crisis and Resilience in Health and Healthcare; Ecosystem Services in Urban and Peri-Urban Landscapes; Modelling, mapping and assessing land degradation for sustainable management of land systems). The pillars and the workshops emphasize the importance of understanding new geographical perspectives, social inequalities and sustainable land management in a rapidly globalizing world, and particularly for providing advanced geographical knowledge.

The aim of the conference was to collect knowledge and share experiences about the latest achievements in the field of geography. Through case studies, cutting-edge research and theoretical insights, the event provided a human-centered approach to geography, encouraging critical thinking and geographical education about how places are experienced, imagined, and transformed by people across the globe.


Re-shaping Territories, Environment and Societies:
New Challenges for Geography
Professor Olaf Kühne,
University of Tübingen, Germany
Plenary presentation:
Neopragmatist
redescription of regional
geography


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ROMANIAN – ALGERIAN COLLABORATION WITHIN THE ERASMUS PROGRAMME, EARTH SCIENCES 15-22 DECEMBER 2024

The Erasmus programme, initiated and coordinated by the European Union, originally only within the EU member countries, is currently also being carried out with non-EU countries, based on interuniversity collaborations. "Erasmean" spirit advocate, the programme bears the name of Erasmus of Rotterdam, "the first to have a European conscience, the first militant pacifist, the most eloquent defender of the humanist ideal of spiritual understanding worldwide" (Zwieg, 1975). His humanist attitude and existence are part of the 15th century of great geographical discoveries (1466 birth year) by great thinkers of philosophy. From ancient Greeks and Romans through the Renaissance to the present day, the need for spiritual understanding has known varied, sometimes confusing, meanings and applications. In this context, the Erasmus meaning of understanding between people appears today a solution to human coexistence. That is why geography, through its multidisciplinary research object, is the science that is part of universal knowledge, and the Erasmus project was adopted as a means of understanding the world. The Erasmus partnership concluded in 2019 between the University of Bucharest (Faculty of Geography) and the University of Constantine facilitated the knowledge of the various forms of education, culture and science of the two countries – Romania and Algeria.

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In the period of 15-22 December 2024, a team of professors from the Faculty of Geography participated in the Erasmus Programme in Algeria in the following activities:

A. International Conference Natural Risks, Urban Territory Management and Analysis Tools "The Advantages of Artificial Intelligence" (December, 16-18, 2024), at the occasion of the 10th conference of the Romanian-Algerian geographical cooperation, organized by: University of M'Sila Mohamed Boudiaf; Institute of Urban Techniques Management; LABORATORY City, Environment, Hydraulics and Sustainable Development (director Prof. Ali Redjem). The Chairman of the Organizing Committee was Prof. Nouibat Brahim (University of M'Sila).

In the opening session plenary communications were held by prof. Florina Grecu, prof. Andre Ozer, Mahmoud Hasbaia. The oral communications were conducted in five sections, in several stages, to allow discussions and debates on the communicated topics, as follows:

- Cities, urban resilience and natural hazards,
- Conservation of urban ecosystems,
- Spatial planning, cartography and digitisation,
- Urban mobility and regional planning,
- Urban and architectural heritage in the digital era.

The presentations of the University of Bucharest authors were focused on the topic of natural and anthropogenic hazards and the associated risks, related to climate change:

- *Some results of the Romanian-Algerian cooperation in geographical science at the occasion of the 10th conference (2006-2024)* – Florina Grecu, Abdelkader Abdellaoui, Chaouki Benabbas, Ali Redjem.
- *UNESCO Heritage Site Exposed to Natural and Man-Made Geomorphological Hazards* – Andreea Andra-Topârceanu, Mihai Mafteiu, Mihaela Verga, Adriana-Bianca Ovreiu, Sonia Malvica, Donatella Carboni.
- *Anthropogenic transformation of Danube River Valley in its lower sector* – Mihaela Verga, Andreea Marin, Andreea Andra-Topârceanu.

- *Active Tectonic Context and Gravity Processes in North-East Algeria* – Chaouki Benabbas, Florina Grecu, Yacine Benzid,
- *Impact of climate variability on forest fires, methodological Approach (Case of the wilaya of Skikda-Algeria*) – Naouel Mihoubi, Soumiya Boulahbal, Florina Grecu, Sara Aziz.
- *Climate change and the related environmental policies used in Romania* – Emilia Visan, Gheorghe Visan.

Field trieps were organized in accordance with the theme of the conference, so as to allow the continuation of discussions regarding the relationship between the territorial arrangement and the dynamics of the terrestrial space. The visited sites included: **EL KALAA des Beni Hammade**, a representative geosite for the history of Hodna Mountains area, but also for its geological and geomorphological complexity; **Maghreb PIPE Industries,** a local company used as a good practice example for sustainable industrial development. Both field trips were accompanied by extensive explanations given by colleagues from the University of M'Sila, as well as by specialists from the industry. These practical activities prove the usefulness of such work visits, well appreciated by the participants.

Excellent organization, high scientific attire of communications, reliability of participants, all are attributes that enrol the seminar from M'Sila in the list of the most successful ones, making unforgettable memories for all over 100 participants in the wonderful area of the Hodna Depression in the Atlas Mountains.

Figure 1. Beni Hammad Fort in Hodna Mountains

B. PhD day at the University of Constantine3 (December 19, 2024). Festivity of doctoral thesis defense *Vulnerabilite et risque d'inondation : vers une strategie de prevention et d'adaptation Cas de la ville de Constantine* by Manel YAKHLEFOUNE, coordinated by Prof. Chaouki BENABBAS and Pr Florina GRECU. During the meeting, the PhD attendant also presented scientific works included in the thesis preparation plan.

A **working meeting at CRAT** (Research Center for Territorial Arrangements, led by prof. Chaouki Benabbas) was also included in the program of the visit to Constantine. The discussions about the organization of the center, the research topics and the collaboration between CRAT and the University of Bucharest highlighted the need for material basis, collaboration between specialists from different fields with emphasis on current research concerns related to the development of society, climate change, etc.

Figure 2. Romanian Team visiting CRAT

Different **field trips in the area of Constantine city** were organized in the following days. The name of the city is related to the Roman emperor Constantine. The Roman inhabitation in northern Africa left numerous sites, evidence of the technique and the advanced level of ancient Roman civilization.

The *roman site Tidis*, set in a picturesque mountain landscape, has a rich history. Initially representing a Berber settlement, the site was converted as a defense outpost in the Roman period (sec. 3 AD), having a strategic position in a narrowed sector of Rhumel valley.

The *Masinisa mausoleum* is the tomb of the King of Numibia, a prominent figure in the history of North Africa during the 3rd century BC. He managed to unify Berber tribes during the Second Punic War and to create a powerful kingdom allied to Rome.

Figure 3. Archeological site of Tidis (a) and Masinisa Tomb (b

La Medina represents the heart of Constantine city, the historic center formed by a labyrinth of narrow streets, with specific Islamic architecture and rich trades history, that has preserved the unique urban landscape for centuries. The culinary experience on a traditional restaurant placed above the Rhumel river gorges has familiarized us with the local specific of gastronomy.

Figure 4. Constantine City

Given the complexity and variety of activities, we believe that this program has helped to strengthen the collaboration relations between the two partner universities in Algeria (University of M`Sila, University of Constantine3) and the University of Bucharest, contributed to the expansion of the network by initiating the partnership agreement with CRAT and enriched the cultural and social experiences of the participants.

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