CITIES IN EUROPE AND CENTRAL ASIA

BULGARIA

⚙ METHODOLOGY

This Country Snapshot was produced as part of an Advisory Services and Analytics *(ASA)* work developed by the Urban, Social, Rural and Resilience Global Practice *(GPSURR)*. The objective of this ASA is to analyze economic, spatial and demographic trends in the urban systems of countries in Europe and Central Asia. City-level population data was obtained from the (or validated by) Statistics Department of Bulgaria. In the absence of city-level economic and spatial data over the period of analysis, nighttime lights *(NLS)* satellite imaging was used to assess spatial and economic trends in cities. In previous studies, NLS intensity has been found to be positively correlated with levels of economic activity as measured by GDP. Regional-level regressions of NLS and GDP were conducted to assess validity of using NLS as a proxy for economic activity in Bulgaria. The results suggest a significant and positive correlation between NLS intensity and GDP. In Bulgaria, GDP to NLS elasticity was found to be 1.20 (an increase in light intensity of 1 percent is associated with a 1.20 percent increase in GDP). This country snapshot presents its results at city level. Demographic trends are available for all cities but NLS data analysis is only available for 159 cities; the remaining settlements did not produce enough light to be considered "urban" by the NLS threshold employed in this analysis. Similar assessments made in other countries suggest that NLS are able to capture more settlements with 30,000 inhabitants or more. For additional information on this ASA please contact Paula Restrepo Cadavid (prestrepocadavid@worldbank.org) or Sofia Zhukova (szhukova@worldbank.org)

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DEMOGRAPHICS

|		BEFORE	RECENTLY
Fertility Rates	Bulgaria	1.90[1]	1.50[2]
	ECA	1.95[1]	1.73[2]
Life Expectancy	Bulgaria	71.72[1]	74.46[2]
	ECA	72.05[1]	76.77[2]
% of Population Above Age 65	Bulgaria	12.72[1]	19.32[2]
	ECA	11.59[1]	15.16[2]
Population Growth (Average Annual %)	Bulgaria	-0.87[3]	-0.78[4]
	ECA	0.27[3]	0.33[4]
Urban Population Growth (Average Annual %)	Bulgaria	-0.47[3]	-0.40[4]
	ECA	0.04[3]	0.07[4]
Urbanization Level (%)	Bulgaria	66.00[1]	74.60[5]
	ECA	67.59[1]	70.30[5]
Annual Urbanization Rate (%)	Bulgaria	0.00[3]	0.00[4]
	ECA	0.12[3]	0.24[4]
City Average Population	Bulgaria	29,974[6]	27,445[2]
	ECA	61,105[6]	64,914[2]
% Cities With More Than 100,000	Bulgaria	4.17[6]	3.40[2]
	ECA	10.41[6]	10.57[2]
% Cities With More Than 500,000	Bulgaria	0.38[6]	0.38[2]
	ECA	1.56[6]	1.83[2]
% Cities Losing Population	Bulgaria		94.69[7]
	ECA		61.07[7]
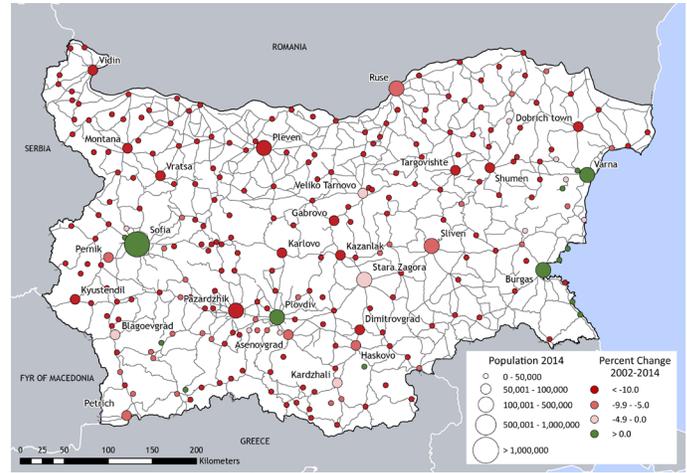
SPATIAL

|		BEFORE	RECENTLY
Built Up Area (100,00km²)	Bulgaria	1,847.23[8]	3,402.43[2]
	ECA	213,244[8]	288,046[2]
Built Up m² Per Capita	Bulgaria	211.23[8]	468.28[2]
	ECA	247.39[8]	320.49[2]
Built Up Area Growth (%)	Bulgaria		84.73[9]
	ECA		35.07[9]
Built Up m² Per Capita Growth (%)	Bulgaria		121.55[9]
	ECA		29.54[9]
Number of Cities in Analysis	Bulgaria		265[7]
	ECA		5,549[7]
Number of Identified Cities (NLS)	Bulgaria		205[10]
	ECA		3,637[10]
Number of Growing Cities (NLS Area)	Bulgaria		117[10]
	ECA		1,804[10]
Number of Agglomerations (NLS)	Bulgaria		24[10]
	ECA		352[10]

Urban Footprints 1996 - 2010
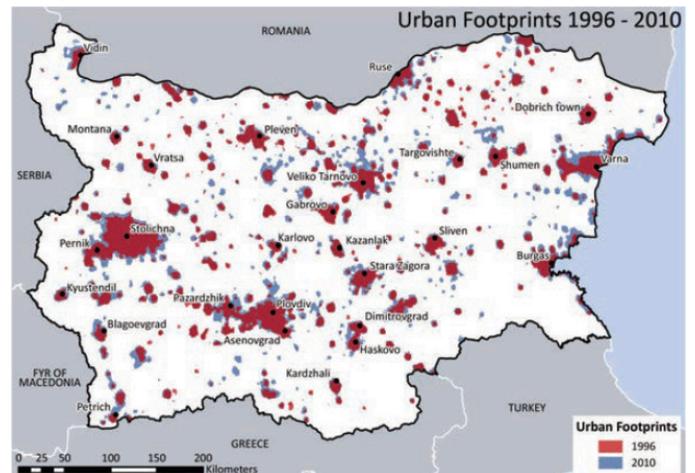
This section uses data from the Global Human Settlement Layer (GHSL.) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.

ECONOMICS

		BEFORE	RECENTLY
Average Annual GDP growth (%)	Bulgaria	-0.87[3]	3.25[4]
	ECA	2.00[3]	1.59[4]
Average GDP per capital growth (%)	Bulgaria	-0.43[3]	3.25[4]
	ECA	2.00[3]	1.59[4]
Estimated contribution of urban GVA to GDP growth (%)	Bulgaria		65.37[4]
	ECA		—
Unemployment Rate (%)	Bulgaria		12.94[2]
	ECA		9.45[2]
Poverty rate (% at national poverty line)	Bulgaria		21.00[2]
	ECA		—
Urban to rural GDP ratio	Bulgaria		12.31[2]
	ECA		—
Urban NLS Intensity Growth (%, annual average)	Bulgaria		41.37[10]
	ECA		6.921[10]
% City Economies Growing (in NLS intensity)	Bulgaria		93.80[10]
	ECA		95.92[10]
GVA to NLS Elasticity	Bulgaria		1.20[11]
	ECA		0.55[11]

Nighttime Lights Compound Growth Rate 1996 - 2010
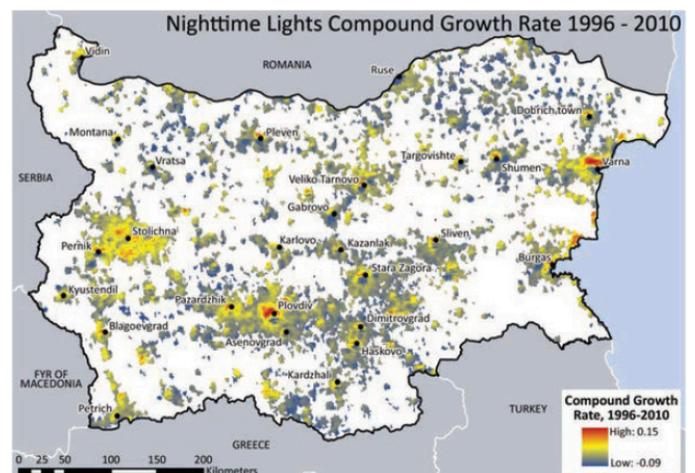
[1] 1989, [2] 2013, [3] 1989–2001, [4] 2001–2014, [5] 2014, [6] 2001, [7] 2001–2013, [8] 2000, [9] 2000–2013, [10] 2000–2010, [11] 2000–2011.

URBANIZATION TRENDS

Over the last two decades, Bulgaria has experienced a dramatic population decline. Between 2001 and 2013 the country lost 8 percent of its population. The degree of decline in Bulgaria's population growth rate is below the ECA regional average. The sharp decline in population after the fall of the Soviet Union is largely linked to an overall aging trend of the population and a significant decline in fertility *(fertility rates have recovered slightly since 2009 but remain below replacement levels since 1964)*. Outmigration is also thought to be an important contributor to population decline.

The country continues to urbanize despite an absolute decline of urban population, as urban areas are declining at slower rates than rural areas. Between 1989 and 2001, the rural population decreased from 3 to 2.4 million *(a 20 percent decline)* while the urban population decreased from 5.8 to 5.5 million *(5 percent decline)*. The interaction of these dynamics resulted in an increase of 3 percent in the urbanization levels to reach 69 percent in 2001. Between 2001 and 2014, the rural population further declined to 1.9 million *(a 20 percent decline)* while the urban population went down to 5.3 million *(a 3.6 percent decline)*. As a result, in 2014 urbanization levels were at 74 percent.

- Bulgaria
- Europe & Central Asia (developing only)

- Rural Population
- Urban Population
- Urbanization Level
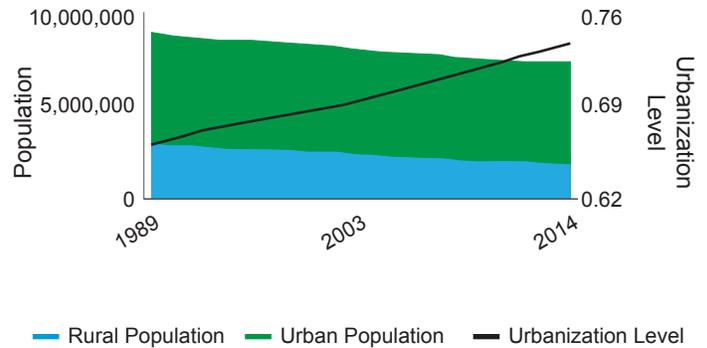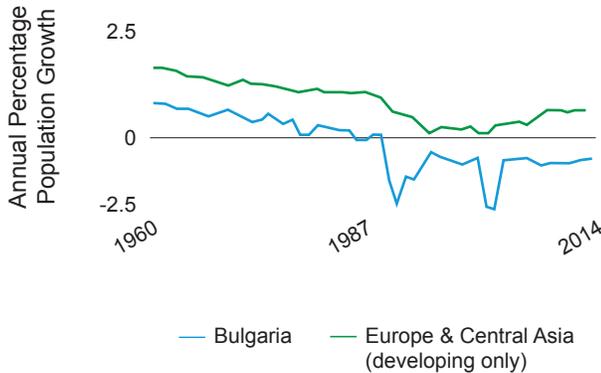
DEMOGRAPHICS OF THE URBAN SYSTEM

Bulgaria's urban system is composed of a large number of small towns but most of the urban population lives in cities with more than 100,000 inhabitants. Most of the cities in the urban system are shrinking, with 94 percent of cities losing population over the last decade. However, city population growth and decline is not homogeneous across the country. While most small towns and mid-size cities are declining, large cities such as Sofia and Varna continue to grow in population. Cities belonging to agglomerations as defined by NLS footprints—concentrate some of the fastest growing areas in the country. Out of the 15 fastest growing cities *(see table below)*, 7 belong to agglomerations. This reflects a re-organization of the urban population across the urban system. A spatial pattern is also visible, with most of the cities located along the Black Sea coast growing.

DISTRIBUTION OF CITIES BY CITY SIZE: **2011**

0%   50%   100%
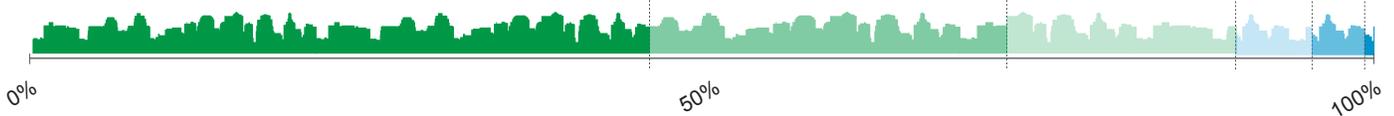
URBAN POPULATION DISTRIBUTION BY CITY SIZE: **2011**

0%   50%   100%
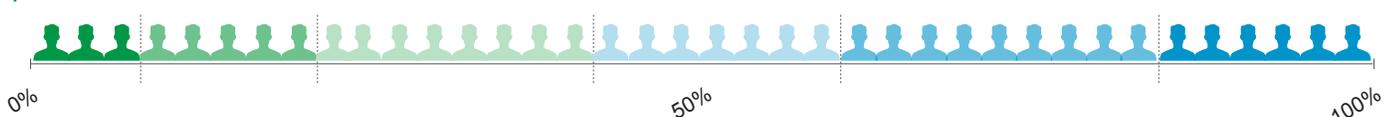
- Small Town (<10k)
- Mid-Size Towns (10k–20k)
- Large Towns (20k–50k)
- Small Cities (50k–100k)
- Mid Size Cities (100k–500k)
- Major Cities (>500k)

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LARGEST CITIES BY POPULATION

CITY	POPULATION 2013	% CHANGE 2001–2013
Sofia	1,309.634	11.12
Varna	344,663	7.37
Plovdiv	341,041	0.27
Burgas	211,764	0.97
Ruse	165,184	-8.41
Stara Zagora	159,662	-4.89
Pleven	126,972	-14.40
Silven	123,122	-9.27
Pzardzhik	112,373	-11.72
Shumen	92,171	-11.38
Haskovo	92,090	-6.95
Dobrich town	88,807	-10.52

LARGEST URBAN AGGLOMERATIONS

AGGLOMERATION	POPULATION 2013	% CHANGE 2001–2013	CITY COUNT
Sofia	1,487.145	8.27	8
Varna	427,138	4.91	7
Burgas	221,981	-0.04	2
Blagoevgrad	81,773	-3.44	2
Kardzhali	83,237	-4.29	2
Plovdiv	725,887	-5.03	15
Razlog	33,076	-7.36	2
Petrich	92,517	-7.86	2
Gurkovo	9,502	-9.56	2
Botevgrad	40,097	-9.98	2
Dobrich town	110,072	-11.67	2
Veliko Tarnovo	182,137	-11.87	7
Haskovo	143,621	-12.02	2

FASTEST GROWING CITIES

CITY	POPULATION 2013	% CHANGE 2001–2013	BELONGS TO AN AGGLOMERATION	AGGLOMERATION
Nesebar	24,481	27.22	No	N/A
Promorsko	6,030	21.11	No	N/A
Sofia	1,309,634	11.12	Yes	Stolichna
Aksakovo	20,583	7.58	Yes	Varna
Varna	344,663	7.37	Yes	Varna
Bozhurishte	8,466	6.46	Yes	Stolichna
Belitsa	9,762	1.65	No	N/A
Pomorje	27,611	1.27	No	N/A
Burgas	211,764	0.97	Yes	Burgas
Stamblovo	5,856	0.95	No	N/A
Avren	8,681	0.36	No	N/A
Plovdiv	341,041	0.27	Yes	Plovdiv
Tsarevo	9,453	0.14	No	N/A

SPATIAL TRENDS OF THE URBAN SYSTEM

Despite declining in population, most of the cities in Bulgaria are growing in area. Between 1996 and 2010, 88 percent of the cities considered in the analysis grew in area. On average, cities area increased by 16 percent. Cities that are part of an agglomerations—as defined by NLS footprints—have grown much more than 'single cities'. While agglomerations have seen an increase of their area of 60 percent—on average. The combination of urban population decline and urban growth suggest that most cities in Bulgaria are experiencing declining population densities—urban sprawl.

Note: Night-Lights are used to define urban footprints and follow their change over time. A urban threshold *(above which a certain pixel is considered urban)* is estimated for each country and used to delimit cities' footprints. Agglomerations—as defined by NLS—are composed of cities whose NLS footprint merges. Single cities are cities who do not belong to any agglomeration.
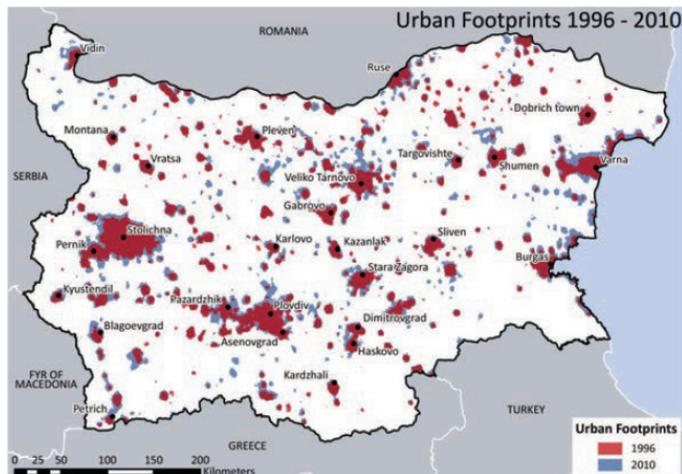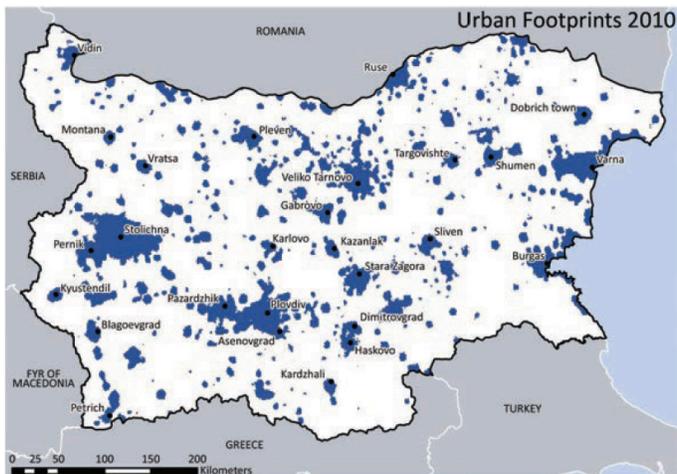
ECONOMICS OF THE URBAN SYSTEM

Urban areas in Bulgaria play a fundamental role in economic growth. Estimates suggest that urban production is 12 times larger than rural production while urban population is only 2.7 times larger than rural population. This reflects much higher levels of productivity in urban areas. Distribution of economic activities across the country can be observed spatially by analyzing light intensity and changes of light intensity over time. As observed in the maps below light intensity levels are highest in the largest urban agglomerations, in particular in Sofia, Plovdiv, and cities along the Black Sea coast corridor such as Varna and Burgas. Changes in light intensity also reveal interesting patterns in the outskirts of some of the largest cities such as Plovdiv, Stara Zagora and Kurdzali, which are declining in light density *(dimming)*.

Note: Urban GDP is constructed Night-Light intensity is being used as a proxy for economic activity at the city-level. For more information on the methodology pleae refer to Methodology on Page 1 of this snapshot. Gross Value Added (GVA) data by sector, as reported by the United Nations Statistics Bureau, is used to measure urban population as a part of total production. The sectors were divided into those that are typically rural according to the following classifications. PLEASE ADD INFORMATION FOR EACH COUNTRY. These groupings are a simplification of the urban and rural divide, which is more complex.

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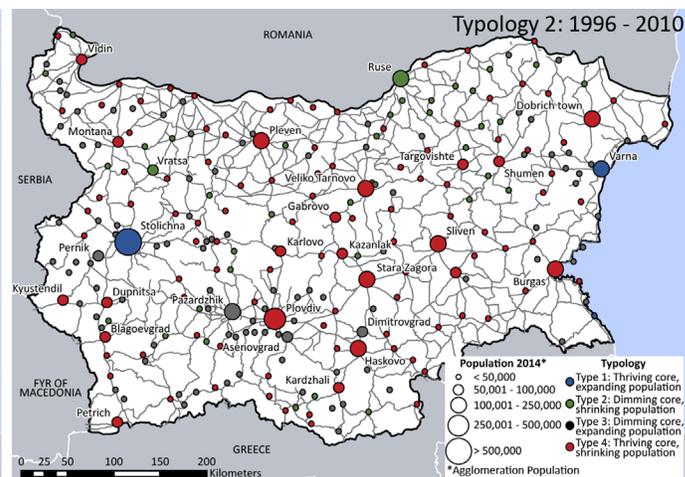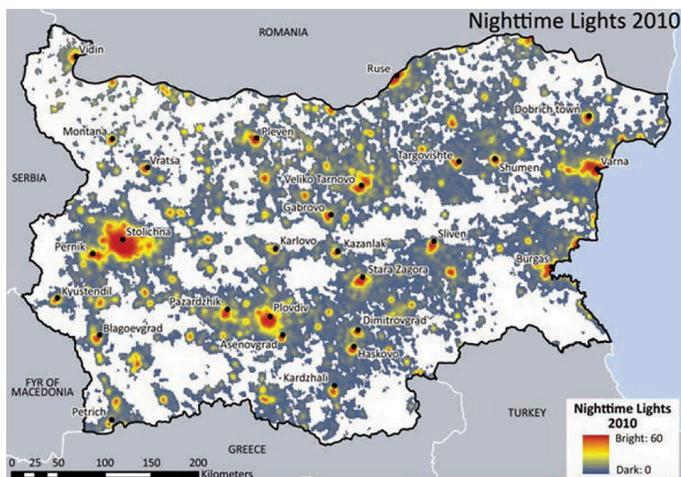
Two city typologies were created based on the light emitted by cities in Bulgaria and population trends *(please refer to note below)*. These typologies are intended to shed lights on spatial, economic and demographic trends of Bulgaria's urban system.

Typology 1: divides cities depending on whether they emit enough light to be considered as urban—by NLS standards. 77.36 percent of the cities in the country were found to emit enough light to be considered urabn in both periods *(identified)*: 9.06 percent were only considered urban by NLS standards in 2010 *(Emerging)*; 10.19 percent were not considered as urban in both periods *(Not identified)*; and 3.40 percent were not considered as urban only in the first period of analyses *(Submerging)*. Typology 1 results are imilar to those found in other ECA countires with mainly citires above 30,000 inhabitants being considered urban by NLS standards and most citites above 50,000 being identified. **Typology 2:** classifies identified cities in four types based on their nightlight trends *(dimming or thriving)* and population trends *(growing or declining)*. 2.11 percent of the idetified cities have a growing population and growing economic activity *(type 1)*. 21.83 percent of the idetified cities have both a declining population and shrinking economic activity, as proxied by nighttime lights *(type 2)*; none of the identified cities have a growing population and a declining economic activity *(type 3)*. 76.06 percent of the identified citirs show growth in economic activity, proxied by NLS, despite showing population decline *(type 4)*.

TYPOLOGY 1			
TYPOLOGY 1	**DESCRIPTION**	**NUMBER**	**PERCENTAGE**
Identified	City emits enough light in both 2000 & 2010	205	77.36
Emerging	City emits enough light only in 2010	24	9.06
Submerging	City emits enough light only in 2000	9	3.40
Non-Identified	City does not emit enough light in both 2000 & 2010	27	10.19

TYPOLOGY 2			
TYPOLOGY 2	**DESCRIPTION**	**NUMBER**	**PERCENTAGE**
Type 1 (Blue)	Growing population & growing economic activity **(thriving core)**	3	2.11
Type 2 (Green)	Declining population & declining economic activity **(dimming core)**	31	21.83
Type 3 (Black)	Growing population & declining economic activity **(thriving core)**	0	0.00
Type 4 (Red)	Declining population & growing economic activity **(dimming core)**	108	76.06

|	TYPE 1: Growing Population & Growing Economic Activity	TYPE 2: Declining Population & Declining Economic Activity	TYPE 3: Growing Population & Declining Economic Activity	TYPE 4: Declining Population & Growing Economic Activity
Population 2011 (000s)	**641.24** (761.75)	17.67 (29.98)	N/A	**38.92** (76.91)
Average Annual Population Growth (% 2001–2011)	**0.36** (0.34	-1.54 (0.59)	N/A	**-1.37** (0.57)
Total NLS Value in 2010 (000s)	**52.01** (54.85	0.66 (1.56)	N/A	**2.87** (6.19)
NLS per Capita (2010)	**0.11** (0.04)	0.02 (0.02)	N/A	**0.07** (0.04)
NLS Growth (% 2000–2010)	**53.06** (20.39)	11.25 (17.04)	N/A	**35.28** (19.39)
Examples of Cities	**Sofia, Varna, Burgas**	Vratsa, Troyan, Ruse	N/A	**Stara Zagora, Silven, Plovdiv**

POPULATION AND ECONOMIC DYNAMICS

BULGARIA

Annual Percentage Population Growth (y-axis: -00, 0, 03)
Annual Percentage NL Growth in Core (x-axis: -200, 0, 200)

SPATIAL AND ECONOMIC DYNAMICS

BULGARIA

Percentage Area Growth (y-axis: -300, 0, 300)
Percentage NL Growth in Core (x-axis: -200, 0, 200)
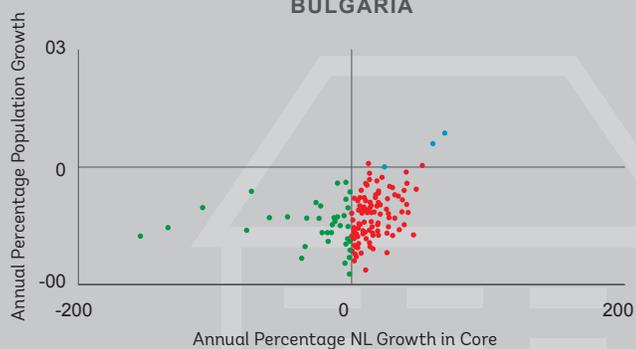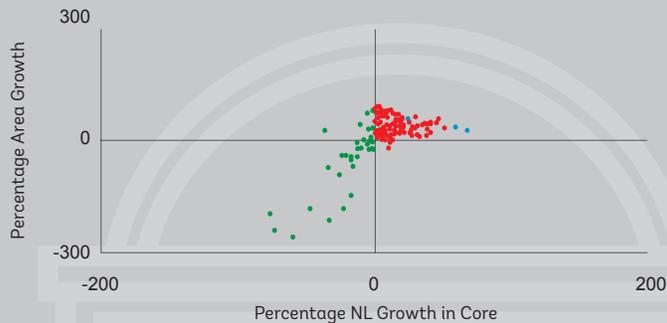
POPULATION AND SPATIAL DYNAMICS

BULGARIA
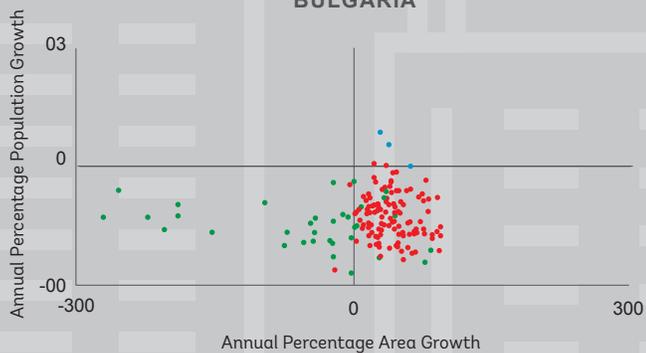
Annual Percentage Population Growth (y-axis: -00, 0, 03)
Annual Percentage Area Growth (x-axis: -300, 0, 300)

Type 1: Growing population, growing economic activity

Type 2: Declining population, declining economic activity

Type 3: Growing population, declining economic activity

Type 4: Declining population, growing economic activity

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CONCLUSIONS

Cities in Bulgaria are experiencing an important population decline, which is linked to the overall decline of the country's population and its urban population. However, the country continues to urbanize—in the strict sense of the term—as urban areas decline at slower rates than rural areas. Urban population decline is also not homogeneous across the territory. Decline is disproportionately concentrated in small towns and mid-size cities while large cities like Sofia and Varna continue to grow. A spatial pattern is also visible, with most of the cities located along the Black Sea coast corridor growing. This evidences a re-organization of population within the urban system with cities competing to retain and attract available human capital. Agglomerations and large cities appear to be wining the 'competition' as they concentrate the little urban population growth observed in the country.

Cities in Bulgaria play a fundamental role in the country's economy. In fact, most cities continue to thrive *(grow in light intensity)* despite experiencing population decline. This is different from what is observed in other ECA countries, such as Ukraine, where population decline is much more closely correlated with economic decline. Night lights patterns also confirm the consolidation of a few urban growth centers such as Sofia and Varna, who continue to grow both in economic and population density. Spatial patterns revealed that most cities in the country are sprawling, as their urban footprint continues to grow while their population declines.

This analysis of the urban system reveals the emergence and consolidation of three city types with contrasting economic, spatial, and demographic patterns. The first type is composed of a few urban centers that are large contributors to the economy and continue to be pillars of economic growth. As mentioned above, these are mainly represented by large cities and agglomerations. The second type, corresponds to cities which continue to be engines of growth in the country despite declining in population. The third corresponds to cities that are declining both in population and economic activity. While this snapshot does not intend to study the underlying dynamics behind observed trends nor prescribe specific interventions; the analysis does have important policy implications. In particular in regards to the need to develop a dual approach in the managing of urban areas; As it will be difficult to redress trends in overall urban population decline, Bulgaria needs to put in place the right national policies to better manage the population decline of most of its cities. At the subnational level, local authorities will need to re-assess how infrastructure is planned and maintained and the way services are financed and delivered. The country also needs to put in place the right policies in cities that continue to grow economically, but are experiencing population decline. In these cases, city administrators should aim at managing population decline in an efficient and harmonious way making the best out of it,for example, turning brown fields into public space and optimizing public transportation. In parallel, Bulgaria also needs to recognize the role of urban areas in economic growth and make sure that they have the right tools to reach their full potential. To achieve increased productivity in urban centers, the right mix of good governance, a beneficial business climate, and an efficient provision of public goods, usually in the form of public services and infrastructure, is necessary so that agglomeration economies are fostered and congestion costs reduced. In urban areas experiencing population growth, cities should focus on adapting infrastructure and services to ensure that new-comers are well absorbed and integrated into the city and manage peri-urban growth to avoid sprawl, etc. In addition, the realignment of city boundaries or introduction of metropolitan governance mechanisms might be needed to achieve an effective coordination of agglomerations which span across administrative units.