# CITIES IN EUROPE AND CENTRAL ASIA

UZBEKISTAN

METHODOLOGY

This country snapshot was produced as part of an Advisory Services and Analytics (ASA) work developed by the Urban, Social, Rural and Resilient 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 National Statistics Institute. In the absence of city-level economic and spatial data over the period of analysis, nighttime light (NLS) satellite imaging was used to assess spatial and demographic 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 the validity of using NLS as a proxy for economic activity in Uzbekistan. The results suggest a significant and positive correlation between NLS intensity and GDP. In Uzbekistan, GDP to NLS elasticity was found to be 0.55 (an increase in light intensity of 1 percent is associated with a 0.55 percent increase in GDP). This country snapshot presents its results at the city level. Due to measurement error, city-level economic and spatial results should be analyzed with caution; and when possible, additional city level data *(i.e. satellite imagery, firm-level data, and etc.)* should be consulted to corroborate results. This snapshot classified 118 settlements as cities in Uzbekistan. Demographic trends are available for all 118 cities but NLS analysis is only available for 46 cities; the remaining settlements did not produce enough light to be considered "urban" by the NLS threshold employed in this analysis. Similar assessments done for other countries suggest that NLS are able to capture most 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	Uzbekistan	4.07[1]	2.20[2]
	ECA	1.95[1]	1.73[2]
Life Expectancy	Uzbekistan	66.68[1]	68.22[2]
	ECA	72.05[1]	76.77[2]
% of Population Above Age 65	Uzbekistan	4.01[1]	4.61[3]
	ECA	11.59[1]	15.37[3]
Population Growth (Average Annual %)	Uzbekistan	1.87[4]	1.56[5]
	ECA	0.25[4]	0.31[5]
Urban Population Growth (Average Annual %)	Uzbekistan	1.15[4]	1.33[5]
	ECA	0.37[4]	0.55[5]
Urbanization Level (%)	Uzbekistan	40.17[1]	67.44[3]
	ECA	36.27[1]	70.52[3]
Annual Urbanization Rate (%)	Uzbekistan	-0.71[4]	-0.23[5]
	ECA	0.12[4]	0.23[5]
City Average Population	Uzbekistan	63,801[1]	83,125[3]
	ECA	72,515[1]	75,132[3]
% Cities With More Than 100,000	Uzbekistan	13.56[1]	15.25[3]
	ECA	12.97[1]	20.02[3]
% Cities With More Than 500,000	Uzbekistan	0.85[1]	1.69[3]
	ECA	2.03[1]	2.27[3]
% Cities losing Population	Uzbekistan	10.17[4]	11.86[5]
	ECA	59.58[4]	61.58[5]
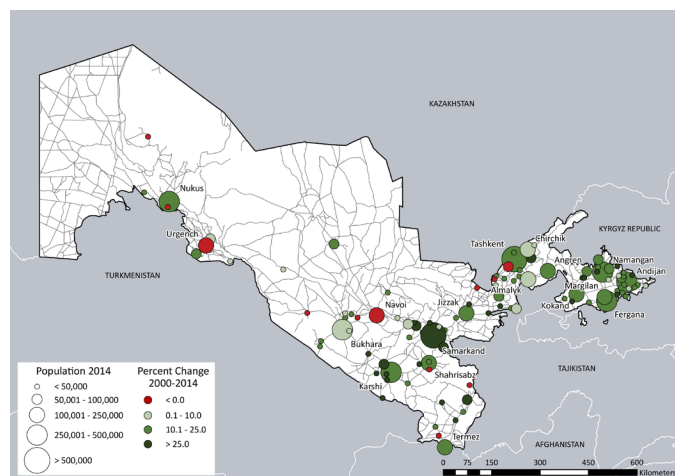
SPATIAL

|		BEFORE	RECENTLY
Built Up Area (100,000km²)	Uzbekistan	1,150[1]	3,304[3]
	ECA	156,892[1]	288,046[3]
Built Up m² Per Capita	Uzbekistan	56.07[1]	109.26[3]
	ECA	186.16[1]	320.49[3]
Built Up Area Growth (%)	Uzbekistan	187.30[6]	
	ECA	83.59[6]	
Built Up m² Per Capita Growth (%)	Uzbekistan	94.86[6]	
	ECA	72.13[6]	
Number of Cities in Analysis	Uzbekistan	119[7]	
	ECA	2,712[7]	
Number of Identified Cities (NLS)	Uzbekistan	46[8]	
	ECA	3,883[8]	
Number of Growing Cities (NLS Area)	Uzbekistan	12[8]	
	ECA	1,645[8]	
Number of Agglomerations (NLS)	Uzbekistan	8[8]	
	ECA	352[8]	
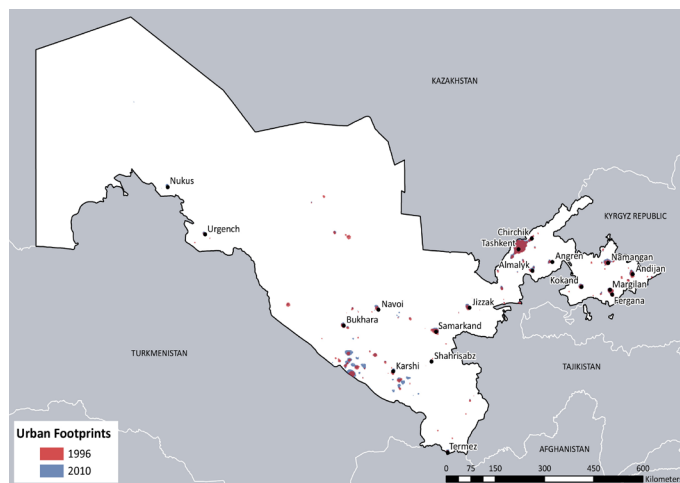
This section uses data from the Global Human Settlement layer (GHSL) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.

ECONOMICS

		BEFORE	RECENTLY
Average Annual GDP growth (%)	Uzbekistan	0.07[4]	7.08[5]
	ECA	1.88[4]	1.70[5]
Average Annual GDP per capital growth (%)	Uzbekistan	-1.77[4]	5.42[5]
	ECA	1.63[4]	1.38[5]
Estimated contribution of urban GVA to GDP growth (%)	Uzbekistan	—	
	ECA	—	
Unemployment Rate (%)	Uzbekistan	—	
	ECA	9.60[3]	
Poverty rate (% at national poverty line)	Uzbekistan	16.00[10]	
	ECA	—	
Urban to rural GVA ratio	Uzbekistan	—	
	ECA	—	
Urban NLS Intensity Growth (%, annual average)	Uzbekistan	-2.61[11]	2.06[12]
	ECA	-3.03[11]	6.92[12]
% City Economies Growing (in NLS intensity)	Uzbekistan	27.78[11]	75.00[12]
	ECA	26.58[11]	94.62[12]
GDP to NLS Elasticity	Uzbekistan	0.55[8]	
	ECA	0.55[8]	
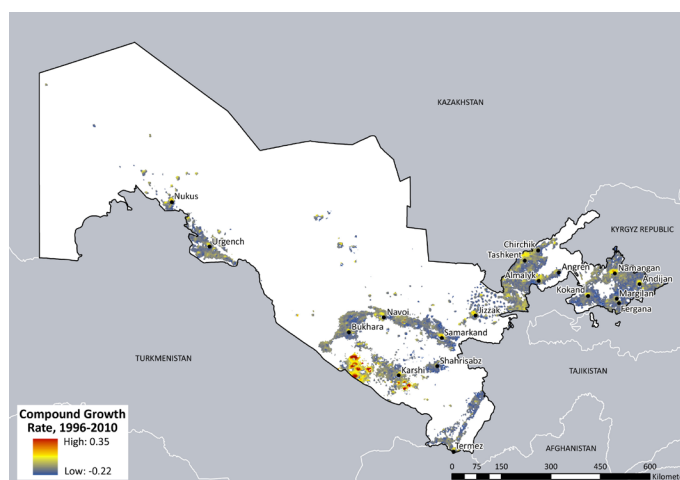
[1] 1990, [2] 2013, [3] 2014, [4] 1990–2000, [5] 2000–2014, [6] 1990–2013, [7] 1990–2014, [8] 1996–2010, [9] 1990–2000, [10] 2011, [11] 1996–2000, [12] 2000–2010.
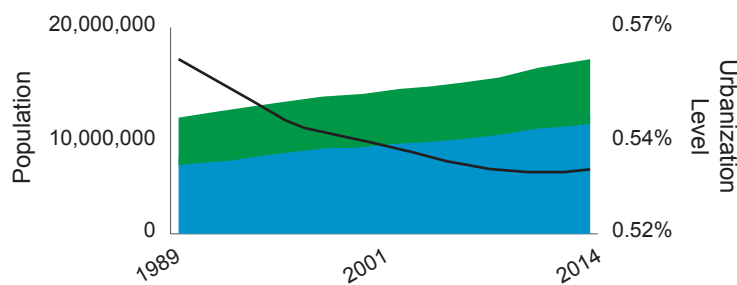
URBANIZATION TRENDS

Uzbekistan's population growth is slowing down. Between 1990 and 2000 Uzbekistan's average annual population growth was 1.87 percent. In the period between 2000 and 2014 Uzbekistan's population grew at a yearly average of 1.56 percent. Despite this, Uzbekistan's compound population growth between 2000 and 2014 is nearly three times greater than ECA's population growth over the same period. Fertility rates have declined but remain above replacement levels and are much higher than ECA's average.

Uzbekistan's urbanization level is declining because the urban population is growing slower than the rural population. In 1990 Uzbekistan's urbanization level was 40.17 percent and declined to 36.27 percent in 2014, a level nearly half of ECA's. The rural population, which between 2000 and 2014 accounted for, on average, 63.41 percent of the population, is growing faster than the urban population. Between 2000 and 2014, the rural population grew a total of 27.01 percent while the urban population grew a total of 18.71 percent in the same period. The annual urbanization rate in Uzbekistan is negative and has stabilized to -0.23 percent in the second period of this analysis.
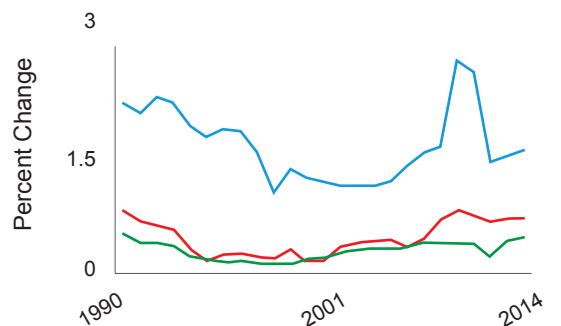
Population Growth, 1990–2014

Uzbekistan — ECA *(Developing Only)* — ECA *(All Income Levels)*

Urbanization Trends, 1989–2014
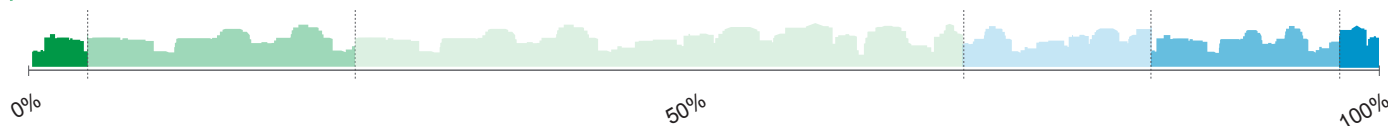
Rural Population — Urban Population — Urbanization Level
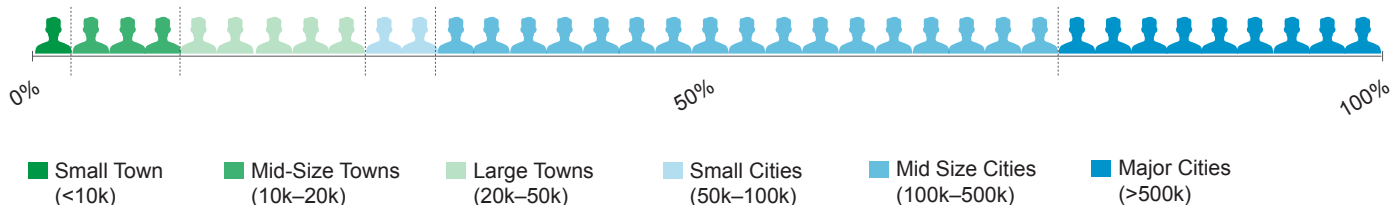
DEMOGRAPHICS OF THE URBAN SYSTEM

While there are a large number of small settlements *(with less than 50k inhabitants)* **the majority of the urban population resides in cities with more than 100k inhabitants.** 66.95 percent of Uzbekistan's urban system consists of settlements with less than 50 thousand inhabitants but over 63.44 percent of the population lives in cities with more than 100 thousand inhabitants. Between 1990 and 2014, the percentage of cities in Uzbekistan's urban system with more than 100 thousand inhabitants increased by 1.69 percent. Shahrisabz, a city located south of Samarkand and in close proximity to Tajikistan's Western border, grew from 55 thousand inhabitants to 101 thousand inhabitants between 1990 and 2014. Termez, located on Uzbekistan's Southern border with Afghanistan grew by 50 percent between 1990 and 2014 to 138 thousand inhabitants. Both cities experienced higher annual growth rates between 1990 and 2000 than between 2000 and 2014. This is consistent with Uzbekistan's population growth patterns, which demonstrated faster growth between 1990 and 2000 than between 2000 and 2014.

Between 2000 and 2014, cities between 20 and 50 thousand inhabitants had the highest average population growth rates. These cities grew on average 22.00 percent. In addition, the fastest growing cities in the country present significantly high growth rates—above 30 percent over the past 15 years—much higher than those observed in other cities in the region. Curiously, while the country has an important number of agglomerations—as defined by nighttime lights standards—none of the fastest growing cities belong to an agglomeration.

DISTRIBUTION OF CITIES BY CITY SIZE: **2014**

0%   50%   100%

URBAN POPULATION DISTRIBUTION BY CITY SIZE: **2014**

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 2014	% CHANGE 2000–2014
Tashkent	2,371,300	10.92
Samarkand	513,600	33.44
Namangan	484,900	24.21
Andijan	410,400	21.13
Nukus	300,700	18.85
Bukhara	273,500	5.39
Fergana	268,100	20.98
Karshi	257,800	23.17
Kokand	236,800	15.51
Margilan	218,900	21.01
Angren	177,700	11.13
Jizzak	165,000	24.25
Chirchik	150,500	5.84
Urgench	138,000	-0.65
Termez	137,900	19.70

LARGEST URBAN AGGLOMERATIONS

AGGLOMERATION MAIN CITY	POPULATION 2014	% CHANGE 2000–2014	CITY COUNT
Tashkent	2,608,900	10.28	4
Almalyk	156,900	9.41	2
Shahrisabz	144,100	17.44	2
Kattakurgan	106,100	9.27	2
Namangan	539,300	23.44	2
Bukhara	286,700	6.19	2
Karasu	33,900	30.89	2
Fergana	487,000	20.99	2

FASTEST GROWING CITIES

| CITY	POPULATION 2014	% CHANGE 2000–2014	BELONGS TO AN AGGLOMERATION	AGGLOMERATION
Dashtobod	37,500	82.93	No	N/A
Yangi-Nishan	13,600	76.62	No	N/A
Pakhtaobod	35,200	57.85	No	N/A
Chimbay	51,300	54.52	No	N/A
Chirakchi	24,900	48.21	No	N/A
Parkent	62,000	40.91	No	N/A
Yangiyer	39,100	39.64	No	N/A
Uchkurgan	40,800	38.31	No	N/A
Turakurgan	31,500	37.55	No	N/A
Pap	27,800	34.30	No	N/A
Pakhtakor	24,700	34.24	No	N/A
Urgut	67,700	34.06	No	N/A
Beshkent	19,700	34.01	No	N/A
Samarkand	513,600	33.44	No	N/A
Kamashi	40,900	31.09	No	N/A

SPATIAL TRENDS OF THE URBAN SYSTEM

Furthermore, Only a small percentage of Uzbekistan's territory emits lights. Most of the activity observable by the nighttime lights threshold used in this analysis is concentrated in the Southeastern tail of Uzbekistan. Another small grouping of activity falls along the Northwestern border shared with Turkmenistan. Kara-Suu is a settlement of 33 thousand inhabitants located in the Eastern tail of Uzbekistan along the border with Kyrgyzstan. Spatially, the lights that are emitted from this city are indistinguishable from Kara-Suu a city, of the same name, that is located across the border in Kyrgyzstan. As such, the nighttime lights threshold used in this analysis identifies the two cities that are separated by national borders as an agglomeration.

Uzbekistan's cities are declining in nighttime light footprint. 61.54 percent of the cities identified in this analysis contracted in nighttime lights footprint, by an average of 37.97 percent between 1996 and 2010. Fergana, Bukhara and Samarkand, are all cities with more than 250,000 inhabitants that grew in population between 1990 and 2014 yet declined by an average of 8.42 percent in nighttime light footprint between 1996 and 2010. Nighttime light footprints are calculated by the nighttime lights emitted by a city, as such the reduction in footprint of 61.54 percent of cities in Uzbekistan may be linked to inconsistent provision of electricity—in particular in peri-urban areas—and does not necessarily indicate that the city or built-up area no longer exists. A reduction in nighttime light footprint only indicates that the emitted light is no longer visible. In contrast, Uzbekistan's built-up area increased by 187.30 percent between 1990 and 2013 (ECA increased by 89.10 percent), which contrary to the nighttime lights, suggest the growth of cities' footprints.

Note: Nighttime 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.
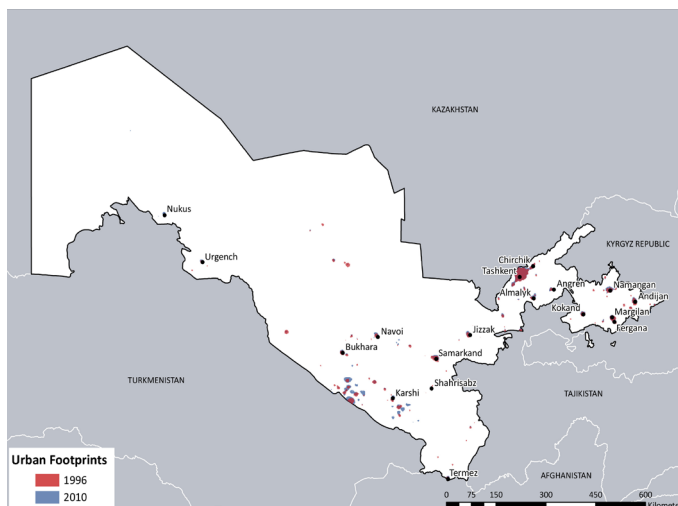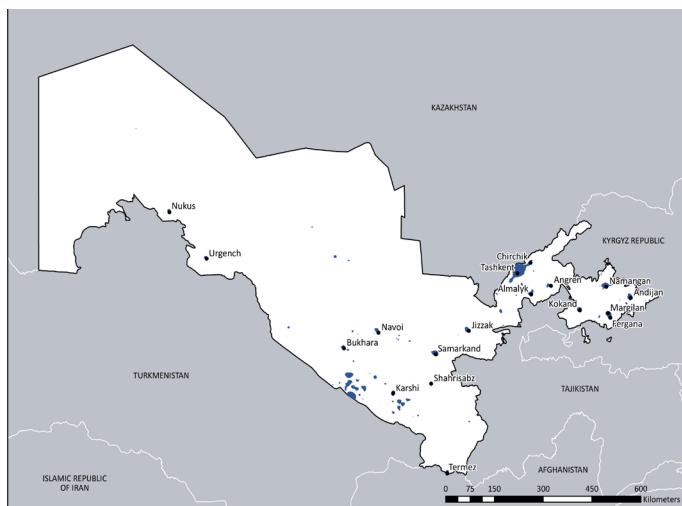
ECONOMICS OF THE URBAN SYSTEM

A majority of Uzbekistan's cities are growing in economic activity. Between 2000 and 2014 Uzbekistan's GDP grew a yearly average of 7.08 percent. This rate was nearly 7 times greater than ECA's growth rate in the same period and 100 times greater than Uzbekistan's average annual growth rate between 1990 and 2000. According to the nighttime lights threshold used in this analysis, 75 percent of cities identified in Uzbekistan have growing economies as measured by the change in total nighttime light intensity between 2000-2010. This contrasts, to the previous period of analysis (1996—2000) in which only 27.78 percent of Uzbekistan's cities were growing in nighttime lights intensity.

Note: Night-light intensity is being used as a proxy for economic activity at the city-level. For more information on the methodology please refer to 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 and rural production as a part of total production. The sectors were divided into those that are urban and those that are rural using the International Standard Industrial Classification of all economic activities (ISIC) , rev. 3.
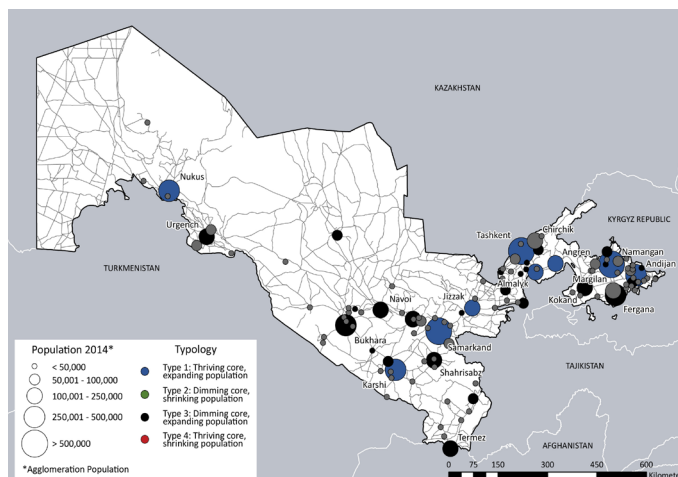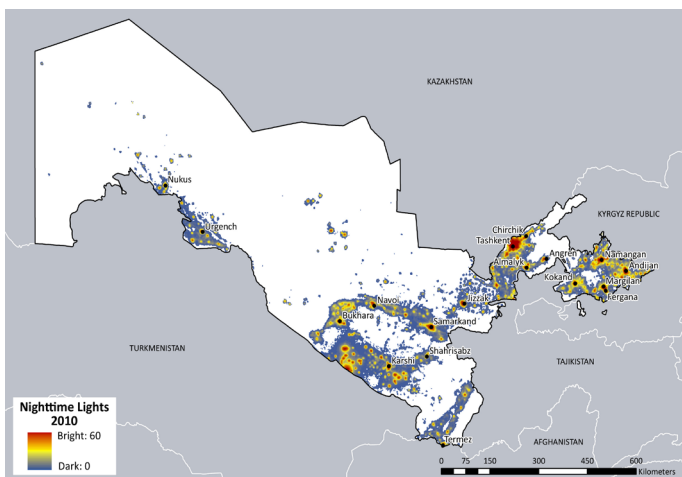
Two city typologies were created based on nighttime lights *(see below)*. These typologies are intended to shed light on economic and demographic trends in Uzbekistan's urban system.

Typology 1 divides cities based on whether they emit enough light to be classified as urban in 1996 and in 2010. In Uzbekistan, 38.66 percent of the cities emitted enough light to be considered urban in both periods *(identified)*, 2.52 percent were only considered urban by night-lights standards in 2010 *(emerging)*, 14.29 percent were considered urban only in 1996 *(submerging)* and the remaining 44.54 percent were not considered urban in both periods *(not identified)*.

Typology 2 classifies identified cities into four types based on their nighttime light trends (thriving or dimming), which are used as a proxy for growing or declining levels of economic activity, and population trends *(growing or declining)*. In Uzbekistan, 25.00 percent of the identified cities have a growing population and growing economic activity *(type 1)*. Type 1 cities include Tashkent, Samarkand and Andijan. 75.00 percent of identified cities have a growing population and dimming lights *(type 3)*. Type 3 cities include Fergana, Kokand and Bukhara. In Uzbekistan, there are no identified cities with a declining population and declining economic activity *(type 2)*. There are also no identified cities with a declining population and growing economic activity *(type 4)*. There are 10 cities in Uzbekistan that despite growing overall in nighttime lights have dimming lights in their urban core. These cities, which are all type 3 cities as a result of the dimming core, include Kokand, Urgench, Termez and Bukhara.

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.
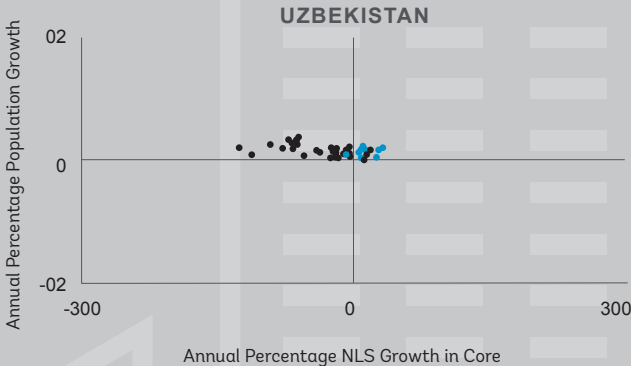
TYPOLOGY 1			
TYPOLOGY 1	**DESCRIPTION**	**NUMBER**	**PERCENTAGE**
Identified	City emits enough light in both 1996 & 2010	46	38.66
Emerging	City emits enough light in only 2010	3	2.52
Submerging	City emits enough light only in 1996	17	14.29
Non-Identified	City does not emit enough light in both 1996 & 2010	53	44.54

TYPOLOGY 2			
TYPOLOGY 2	**DESCRIPTION**	**NUMBER**	**PERCENTAGE**
Type 1 (Blue)	Growing population & growing economic activity **(thriving core)**	9	25.00
Type 2 (Green)	Declining population & declining economic activity **(dimming core)**	0	0.00
Type 3 (Black)	Growing population & declining economic activity **(thriving core)**	27	75.00
Type 4 (Red)	Declining population & growing economic activity **(dimming core)**	0	0.00

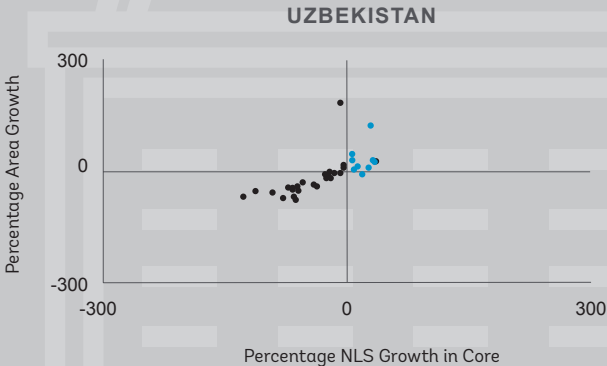|	TYPE 1: Growing Population & Growing Economic Activity	TYPE 2: Declining Population & Declining Economic Activity	TYPE 3: Growing Population & Declining Economic Activity	TYPE 4: Declining Population & Growing Economic Activity
Population 2014 (000s)	**533.77** (703.28)	N/A	**86.07** (71.48)	N/A
Average Annual Population Growth (% 2002-2014)	**1.44** (0.71)	N/A	**1.79** (0.98)	N/A
Total NLS Value in 2010 (000s)	**29.48** (53.55)	N/A	**2.39** (3.67)	N/A
NLS per Capita (2010)	**0.04** (0.02)	N/A	**0.02** (0.01)	N/A
NLS Growth (% 2000–2010)	**41.20** (25.30)	N/A	**3.49** (13.80)	N/A
Examples of Cities	**Tashkent, Samarkand, Andijan**	N/A	**Fergana, Bukhara, Kokand**	N/A

A spatial component added to the **Typology 2** classification provides insight on the interaction between spatial, economic and demographic trends across Uzbekistan's urban system. In Uzbekistan 8 of the 9 **type 1 cities,** which are growing in population and economic activity, grew in area by an average of 31.79 percent. Samarkand the only type 1 city to have declined in area decreased by 10.49 percent between 1996 and 2010. Buka, Kokand, Gulistan and Navoi are the only **type 3 cities** to have grown in nighttime lights footprint by an average of 59.28 percent. The remaining type 3 cities declined by an average of 39.16 percent. Pahktaobod a type 3 city decline by 85.50 percent—the largest area decline for all cities in Uzbekistan.
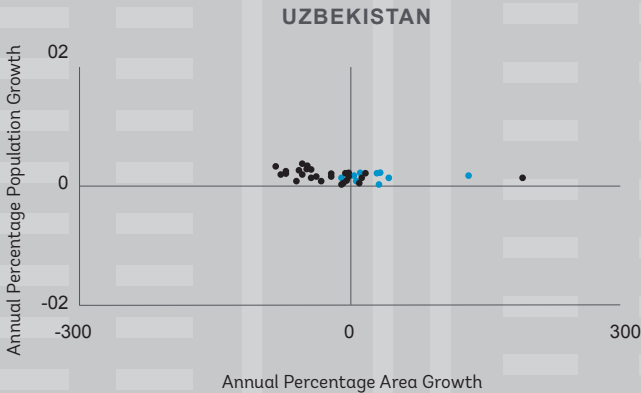
POPULATION AND ECONOMIC DYNAMICS*

UZBEKISTAN

Annual Percentage Population Growth (y-axis): 02, 0, -02
Annual Percentage NLS Growth in Core (x-axis): -300, 0, 300

* Econ growth is NLS growth (1996–2010);
   Population growth is annual avg (1990–2014).

SPATIAL AND ECONOMIC DYNAMICS*

UZBEKISTAN

Percentage Area Growth (y-axis): 300, 0, -300
Percentage NLS Growth in Core (x-axis): -300, 0, 300

* Area growth is NLS footprint growth;
   Econ growth is NLS growth (1996–2010).

POPULATION AND SPATIAL DYNAMICS*

UZBEKISTAN

Annual Percentage Population Growth (y-axis): 02, 0, -02
Annual Percentage Area Growth (x-axis): -300, 0, 300

* Area growth is NLS footprint growth (1996–2010);
   Population growth is annual average growth (1990–2014).

■ **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

7

CONCLUSIONS

Uzbekistan's is slowly "de-urbanizing" in the strict sense of the term as its rural population is growing at faster rates than the urban population. Between 2000 and 2014 the rural population grew 27.01 percent while the urban population trailed behind growing 20.87 percent in the same period. However, many of its cities are growing at high rates, and the urban system as whole is experiencing much higher growth rates than what is observed in the rest of the Europe and Central Asia (ECA) region.

The majority of Uzbekistan's urban population lives in cities with more than 100 thousand inhabitants. Despite this, cities with greater than 100 thousand inhabitants only make up 14 percent of Uzbekistan's urban system. The nighttime lights threshold used in this analysis identified 8 agglomerations in Uzbekistan of which Tashkent is the largest by population and number of cities. However, contrary to what is observed in the rest of the ECA region, the fastest growing cities in the country do not belong to agglomerations.

According to the nighttime lights threshold used in this analysis, 61.54 percent of the cities in Uzbekistan are declining in area. Since nighttime light footprints are determined by lights emitted, these reductions in area may be indicative of unreliable provision of electricity—in the periphery of cities—and do not necessarily mean cities are actually contracting in area. Built- up area growth in Uzbekistan outpaces the average growth in ECA between 1990 and 2013 and suggest, contrary to the nighttime light footprints, that cities are growing in Uzbekistan.

Uzbekistan's cities are undergoing a unique transformation. Compared to the first period of transition, in the second transition period Uzbekistan's cities are doing much better in economic terms. Cities also seem to be growing in population at very high rates and given the still low to medium urbanization levels in the country this is expected to continue in the nearby future. However, many of the identified cities are declining in nighttime light intensity in the core *(Type 3 as outlined above)*. While this might suggest that these cities are not performing as well in economic terms, it might also be linked to the expansion of infrastructure to attend increasing local demand. The relatively low urbanization levels and rapid urban population growth of some of its cities, mean that the country is at an important historical moment to shape urban development and growth.