

CITIES IN EUROPE AND CENTRAL ASIA

KAZAKHSTAN



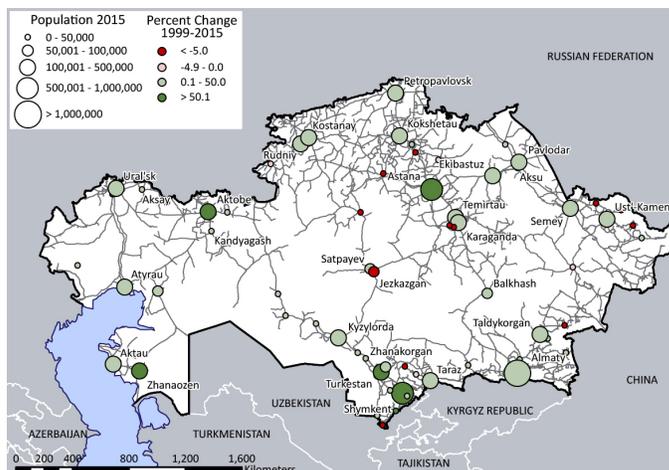
METHODOLOGY

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 Kazakhstan. The results suggest a significant and positive correlation between NLS intensity and GDP. In Kazakhstan, GDP to NLS elasticity was found to be 0.5 (*an increase in light intensity of 1 percent is associated with a 0.5 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 72 settlements as cities in Kazakhstan. Demographic trends are available for all 72 cities but NLS analysis is only available for 53 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)



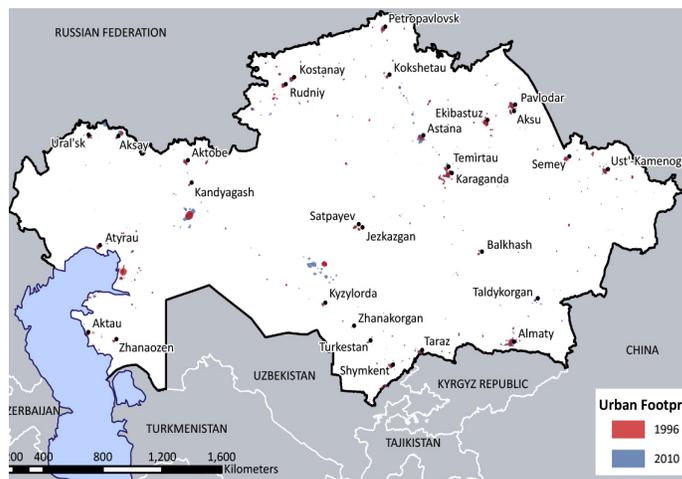
DEMOGRAPHICS

		BEFORE	RECENTLY
Fertility Rates	Kazakhstan	2.72 ¹	2.64 ²
	ECA	1.95 ¹	1.73 ²
Life Expectancy	Kazakhstan	68.33 ¹	70.45 ²
	ECA	72.05 ¹	76.77 ²
% of Population Above Age 65	Kazakhstan	5.85 ¹	6.76 ²
	ECA	11.59 ¹	15.16 ²
Population Growth (Average Annual %)	Kazakhstan	-0.56 ³	0.27 ⁴
	ECA	1.07 ³	0.33 ⁴
Urban Population Growth (Average Annual %)	Kazakhstan	-0.67 ⁵	0.70 ⁴
	ECA	0.04 ⁵	0.07 ⁴
Urbanization Level (%)	Kazakhstan	56.26 ¹	53.28 ²
	ECA	67.59 ¹	70.49 ²
Annual Urbanization Rate (%)	Kazakhstan	-0.12 ⁵	-0.32 ⁴
	ECA	0.12 ⁵	0.24 ⁴
City Average Population	Kazakhstan	107,924 ⁶	129,047 ⁷
	ECA	72,515 ⁶	75,132 ⁷
% Cities With More Than 100,000	Kazakhstan	28.76 ⁶	30.13 ⁷
	ECA	12.97 ⁶	20.02 ⁷
% Cities With More Than 500,000	Kazakhstan	1.37 ⁶	4.11 ⁷
	ECA	2.03 ⁶	2.27 ⁷
% Cities losing Population	Kazakhstan	69.86 ⁸	21.91 ⁹
	ECA	59.58 ⁸	61.58 ⁹



SPATIAL

		BEFORE	RECENTLY
Built Up Area (100,000km ²)	Kazakhstan	2,674 ¹	4,160 ²
	ECA	156,892 ¹	288,046 ²
Built Up m ² Per Capita	Kazakhstan	163.62 ¹	244.18 ²
	ECA	186.18 ¹	320.49 ²
Built Up Area Growth (%)	Kazakhstan	56.00 ¹⁰	83.59 ¹⁰
	ECA	49.00 ¹⁰	72.13 ¹⁰
Built Up m ² Per Capita Growth (%)	Kazakhstan	73 ¹¹	2,712 ¹¹
	ECA	46 ¹¹	3,883 ¹¹
Number of Cities in Analysis	Kazakhstan	39 ¹¹	1,645 ¹¹
	ECA	2 ¹¹	352 ¹¹
Number of Identified Cities (NLS)	Kazakhstan	2 ¹¹	352 ¹¹
	ECA	352 ¹¹	352 ¹¹
Number of Growing Cities (NLS Area)	Kazakhstan	2 ¹¹	352 ¹¹
	ECA	352 ¹¹	352 ¹¹
Number of Agglomerations (NLS)	Kazakhstan	2 ¹¹	352 ¹¹
	ECA	352 ¹¹	352 ¹¹

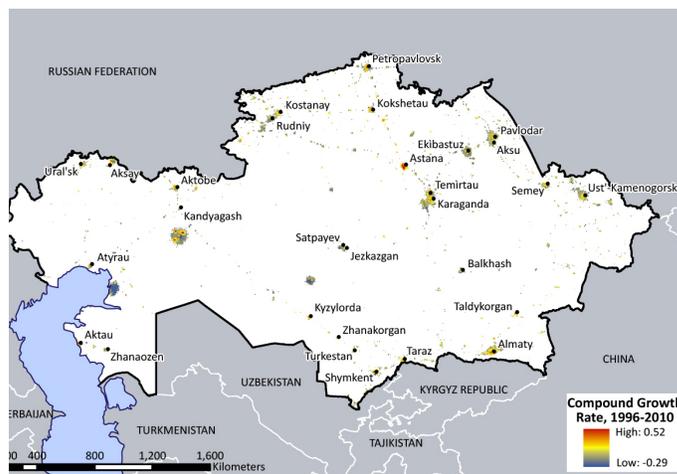


This section uses data from the Global Human Settlement layer (GHSL) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.



ECONOMICS

		BEFORE	RECENTLY
Average Annual GDP growth (%)	Kazakhstan	-1.82 ³	7.58 ⁴
	ECA	2.0 ³	1.53 ⁴
Average Annual GDP per capita growth (%)	Kazakhstan	-0.97 ⁵	6.73 ⁴
	ECA	1.75 ⁵	1.19 ⁴
Estimated contribution of urban GVA to GDP growth (%)	Kazakhstan	70.70 ¹²	—
	ECA	—	—
Unemployment Rate (%)	Kazakhstan	5.21 ²	9.60 ²
	ECA	2.90 ²	—
Poverty rate (% at national poverty line)	Kazakhstan	2.90 ²	—
	ECA	—	—
Urban to rural GVA ratio	Kazakhstan	2.76 ¹³	—
	ECA	—	—
Urban NLS Intensity Growth (% annual average)	Kazakhstan	-3.35 ¹⁴	11.27 ¹⁵
	ECA	2.20 ¹⁴	4.03 ¹⁵
% City Economies Growing (in NLS intensity)	Kazakhstan	18.86 ¹⁴	100.00 ¹⁵
	ECA	58.74 ¹⁴	81.01 ¹⁵
GDP to NLS Elasticity	Kazakhstan	0.50 ¹⁶	0.37 ¹⁶
	ECA	0.37 ¹⁶	0.37 ¹⁶



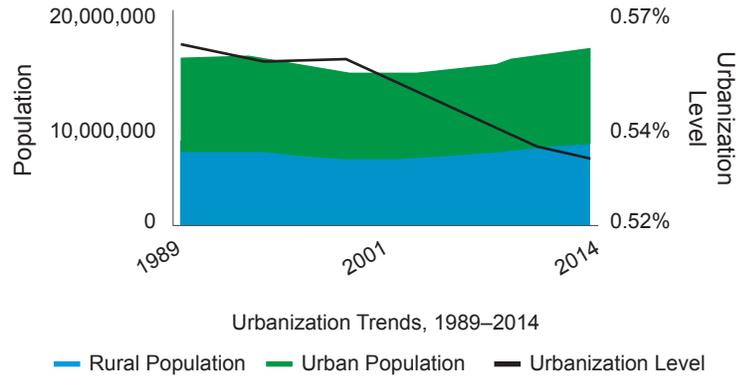
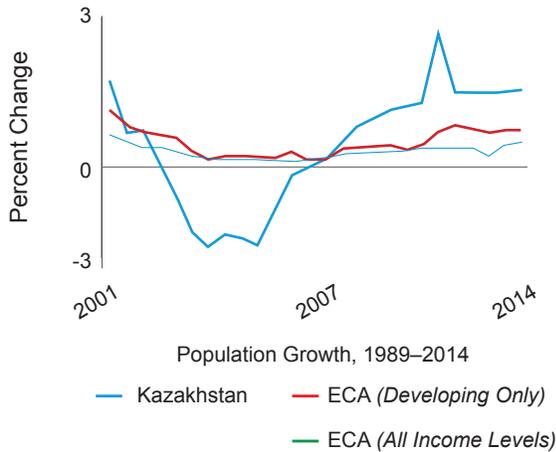
¹ 1990, ² 2013, ³ 1989-2001, ⁴ 2001-2013, ⁵ 1990-2001, ⁶ 1989, ⁷ 2015, ⁸ 1989-1999, ⁹ 1999-2015, ¹⁰ 1990-2013, ¹¹ 1996-2010, ¹² 1998-2009, ¹³ 2009, ¹⁴ 1996-2000, ¹⁵ 2000-2010, ¹⁶ 2002-2010.



URBANIZATION TRENDS

Over the past two decades Kazakhstan has experienced dramatic fluctuations in its population. Between 1989 and 1999 Kazakhstan averaged an annual population loss of -0.56 percent with a low of -1.75 percent between 1998 and 1999. On the contrary, between 2001 and 2014 population grew an average of 1.07 percent.

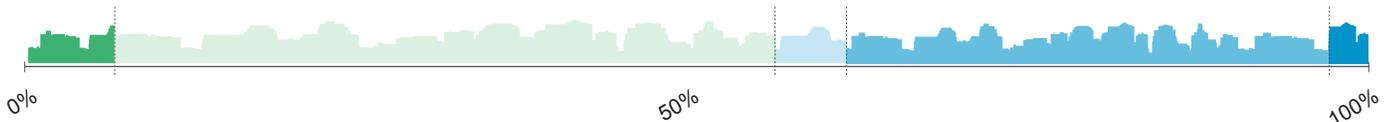
Kazakhstan's urbanization level is declining because the urban population is growing slower than the rural population. Between 2001 and 2014 the rural population grew by an annual average of 1.45 percent to reach 8.1 million; in the same period, the urban population only grew by an annual average of 0.75 percent to reach 9.2 million. As a result, between 2001 and 2014, Kazakhstan witnessed a 0.02 percent decrease in urbanization levels reaching a low of 53.00 percent in 2014.



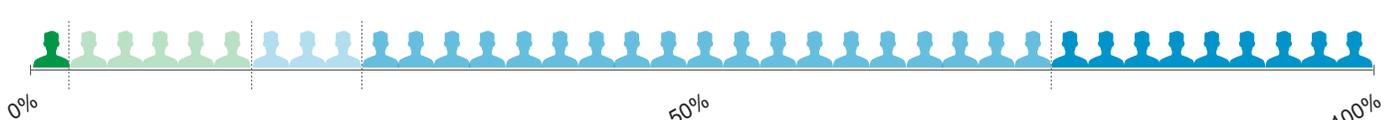
DEMOGRAPHICS OF THE URBAN SYSTEM

55 percent of Kazakhstan's urban system is composed of towns but most of the urban population lives in mid-sized and major cities. In 2015, over 61 percent of Kazakhstan's urban system comprised of mid-sized towns and large towns (populations of 10-20k and 20-50k, respectively). Despite the large number of mid-sized towns and large towns in Kazakhstan, over 78 percent of the population resides in cities with more than 100 thousand inhabitants. Between 1999 and 2015, 78 percent of Kazakhstan's cities were growing. Some cities, such as Astana and Zaqagansk have grown at impressive rates; however, contrary to what is observed in other countries in the region—only 1 of the fastest growing cities belongs to an agglomeration as defined by nighttime lights (see table below). Two agglomerations (Almaty composed of 4 cities) and Karaganda (composed of 3 cities) were found based on the nighttime lights analysis.

DISTRIBUTION OF CITIES BY CITY SIZE: 2014



URBAN POPULATION DISTRIBUTION BY CITY SIZE: 2014



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

LARGEST CITIES BY POPULATION

CITY	POPULATION 2015	% CHANGE 1999–2015
Almaty	1,548,354	36.94
Astana	852,985	159.78
Shymkent	711,873	67.93
Karaganda	492,172	12.66
Aktobe	387,945	53.28
Taraz	356,965	8.13
Pavlodar	332,734	10.72
Ust'-Kamenogorsk	316,699	1.84
Semey	313,829	16.41
Ural'sk	230,785	18.40
Kostanay	226,425	1.61
Kyzylorda	219,976	39.78
Petropavlovsk	209,491	2.93

LARGEST URBAN AGGLOMERATIONS

AGGLOMERATION MAIN CITY	POPULATION 2014	% CHANGE 2002–2014	CITY COUNT
Almaty	1,613,761	38.18	4
Karaganda	535,637	11.63	3

FASTEST GROWING CITIES

CITY	POPULATION 2015	% CHANGE 1999–2015	BELONGS TO AN AGGLOMERATION	AGGLOMERATION
Začagansk	33,530	159.80	No	N/A
Astana	852,985	159.79	No	N/A
Zhanaozen	110,989	127.11	No	N/A
Kaskelen	65,407	75.73	Yes	Almaty
Shymkent	711,873	67.93	No	N/A
Turkestan	157,847	53.99	No	N/A
Aktobe	387,945	53.28	No	N/A
Saryag'ash	39,524	52.52	No	N/A
Kulsary	56,473	46.61	No	N/A
Boralday	27,188	43.10	No	N/A
Atyrau	204,013	42.48	No	N/A
Taldykorgan	138,218	41.04	No	N/A
Kyzylorda	219,976	39.79	No	N/A

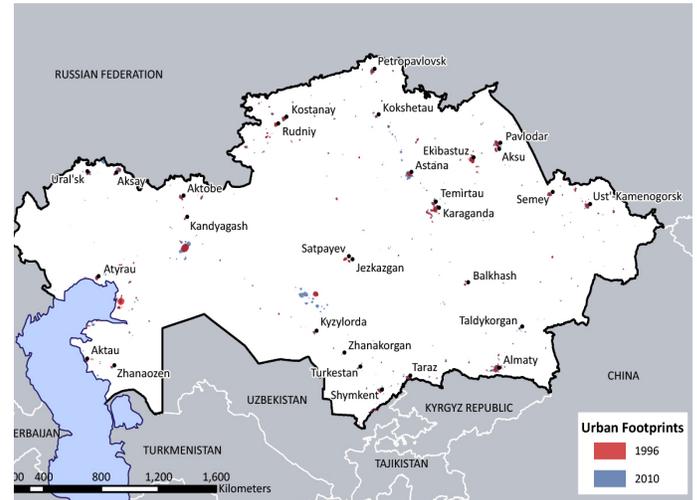
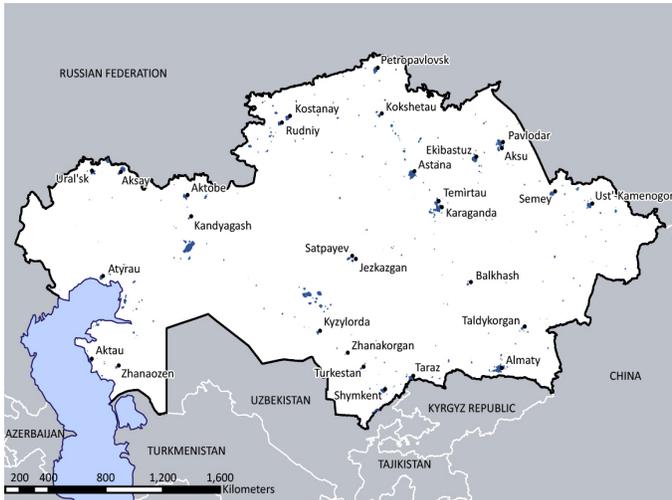


SPATIAL TRENDS OF THE URBAN SYSTEM

Kazakhstan's large internal landmass is not densely populated (as observed in the maps below). Furthermore, cities like Shymkent, Astana and Almaty, with over 500 thousand inhabitants, have urban footprints that are small relative to the size of the country. Spatially, most of the identified cities (see note below) are concentrated in the Northeast along the border shared with Russia and in the Southeast.

Between 1996 and 2010, 88.64 percent of the identified cities grew in area. The mean area change for the identified cities, as determined by NLS, was 120.64 percent. Shieli, Turkestan and Aral underwent the highest changes in nighttime footprint growth and all experienced positive population growth between 1989 and 2015. 34.78 percent of cities grew in nighttime light footprints despite declining in population. These cities include Karaganda, Semey and Rudnyi.

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.

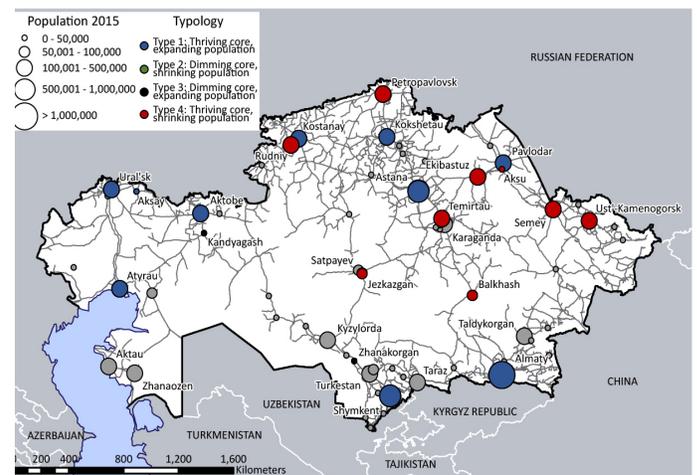
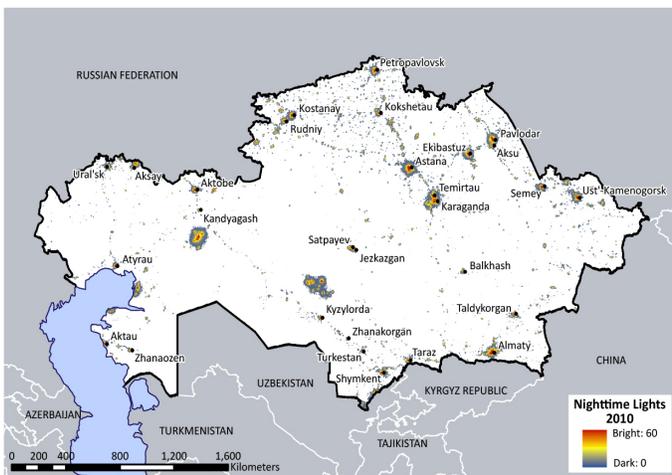


ECONOMICS OF THE URBAN SYSTEM

Cities play a fundamental role in Kazakhstan's economy and growth. Between 1998 and 2009 it is estimated that urban areas accounted for 70.70 percent of the economic growth witnessed in the country. Despite this, Kazakhstan's economy witnessed a reduction in the share of urban to rural gross value added; which dropped from 4.29 percent in 1998 to 2.76 in 2009.

Kazakhstan's cities are growing in economic activity. Nighttime lights are used as a proxy for economic activity in this analysis (please refer to methodology on page 1). According to the nighttime lights threshold used in this analysis, only 18.86 percent of Kazakhstan's cities were growing in nighttime light intensity between 1996 and 2000. However, between 2000 and 2010 this increased dramatically and 100 percent of cities in Kazakhstan have grown in nighttime light 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.





CITY TYPOLOGIES

Two city typologies were created based on nighttime lights (*see below*). These typologies are intended to shed light on economic and demographic trends in Kazakhstan'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 Kazakhstan, 63.01 percent of the cities emitted enough light to be considered urban in both periods (*identified*), 9.59 percent were only considered urban by night-lights standards in 2010 (*emerging*) and the remaining 27.40 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 Kazakhstan, 45.45 percent of the identified cities have a growing population and growing economic activity (*type 1*). **Type 1 cities** include Almaty, Shymkent, Astana and Aktobe. 11.36 percent of identified cities had a declining population and declining economic activity (*type 2*). **Type 2 cities** include Stepnogorsk and Atbasar. 9.09 percent of identified cities have a growing population and declining economic activity (*type 3*). **Type 3 cities** include Kandyagash and Zhanaozen. 34.09 percent of the identified cities have a shrinking population and growing economic activity (*type 4*). **Type 4 cities** include Karaganda, Semey and Petropavlovsk.

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.

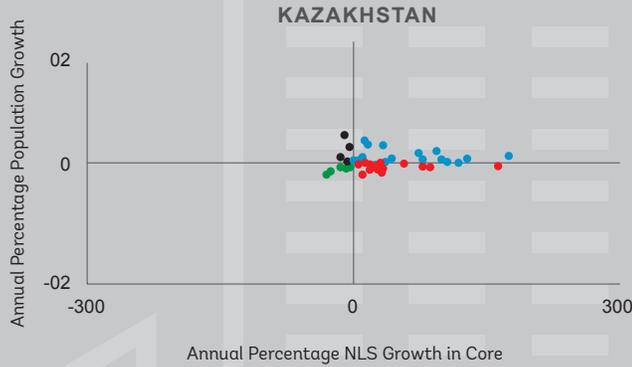
TYPOLOGY 1			
TYPOLGY 1	DESCRIPTION	NUMBER	PERCENTAGE
Identified	City emits enough light in both 1996 & 2010	46	63.01
Emerging	City emits enough light in only 2010	7	9.59
Submerging	City emits enough light only in 1996	0	0.00
Non-Identified	City does not emit enough light in both 1996 & 2010	20	27.40

TYPOLOGY 2			
TYPOLGY 2	DESCRIPTION	NUMBER	PERCENTAGE
Type 1 (Blue)	Growing population & growing economic activity (thriving core)	20	45.45
Type 2 (Green)	Declining population & declining economic activity (dimming core)	5	11.36
Type 3 (Black)	Growing population & declining economic activity (thriving core)	4	9.09
Type 4 (Red)	Declining population & growing economic activity (dimming core)	15	34.09

	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)	279.93 (388.44)	30.50 (10.50)	65.54 (32.81)	110.24 (142.57)
Average Annual Population Growth (% 2002-2014)	1.42 (1.93)	-1.27 (0.50)	2.22 (2.14)	-0.81 (0.56)
Total NLS Value in 2010 (000s)	33.46 (53.30)	2.09 (1.04)	5.29 (2.99)	18.33 (28.37)
NLS per Capita (2010)	0.11 (0.08)	0.08 (0.07)	0.08 (0.04)	0.13 (0.07)
NLS Growth (% 2000-2010)	118.24 (104.94)	3.90 (20.05)	8.07 (10.37)	65.02 (52.61)
Examples of Cities	Astana, Almaty	Stepnogorsk, Atbasar	Kandyagash, Zhanaozen	Karaganda, Semey, Petropavlovsk

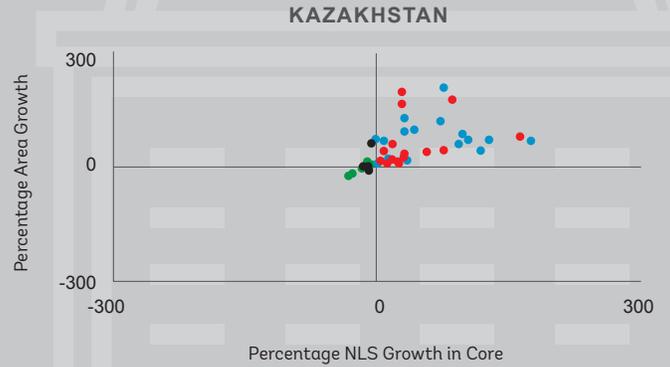
A spatial component that is added to the **Typology 2** classification provides insight into the interaction between spatial, economic and demographic trends across Kazakhstan's urban system. **Type 1 cities**, which are growing in population and in economic activity, are all increasing in area. Astana, for example, witnessed a 240.84 percent change in area between 1996 and 2010. **Type 4 cities**, which are growing in economic activity but declining in population, are also increasing in area albeit at rates slower than type 1 cities. The area growth faced by type 4 cities, which are declining in population, like Karaganda and Jezkazgan is indicative of urban sprawl.

POPULATION AND ECONOMIC DYNAMICS*



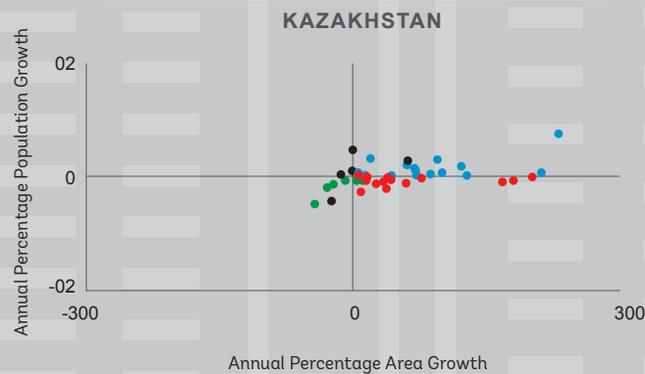
* Econ growth is NLS growth (1996–2010);
Population growth is annual avg (1989–2015).

SPATIAL AND ECONOMIC DYNAMICS*



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

POPULATION AND SPATIAL DYNAMICS*



* Area growth is NLS footprint growth (1996–2010);
Population growth is annual average growth (1989–2015).

■ **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



CONCLUSIONS

Population dynamics in Kazakhstan changed dramatically between the first and the second decade of transition. While total population and urban population declined between 1990 and 2000, this trend was inverted between 2001 and 2013. Changing trends are also visible at the city level; while almost 70 percent of the cities were losing population over the first decade of transition, only 22 percent lost population over the second decade of transition. Urbanization dynamics are similar to the ones observed in other Central Asian countries. The country is de-urbanizing in the strict sense of the term—as urban areas are growing at a lower rate than rural areas.

Most cities in Kazakhstan are growing and many are growing at very high-rates. Population growth in Kazakhstan is highest in cities with more than 500 thousand inhabitants. These cities, which grew an average of 108.65 percent in population between 1989 and 2015 are Shymkent, Almaty, and Akmola. Cities with population between 50 and 100 thousand inhabitants are also concentrated an important share of the country's urban population growth.

Economically, cities appear to play an important role but their contribution to the economy has been diminishing. Estimates suggest that urban areas are more productive than rural areas but that the share of urban to rural GVA declined considerably between 1998 and 2009. This might be linked to the increased dependency of the country on natural resources. Nevertheless nighttime lights analysis at the city-level show that there has been an improvement in economic performance—proxied by light intensity—when comparing the first and the second decade of transition.

Compared to other countries in the region, Kazakhstan has a unique urban profile: a significant number of cities are growing in economic activity and in population while a smaller subset continues to grow in economic activity despite population losses. Across all identified cities only 20 percent appear to be declining in economic activity (*see Typology 2 classification above*). 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. The urban sector in Kazakhstan plays an important role in the diversification of the country's economy. However, the country needs to further support its cities to make sure that they have the right tools to reach their full economic 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. This is of particular importance in fast growing urban areas.



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