

# CITIES IN EUROPE AND CENTRAL ASIA

# KYRGYZ REPUBLIC



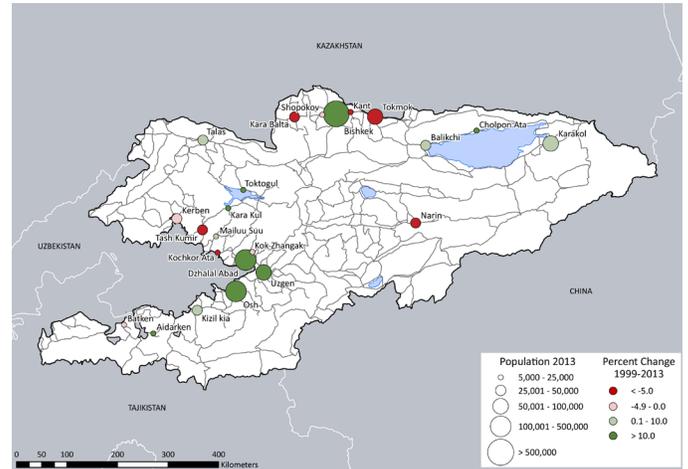
## METHODOLOGY

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 (or validated by) National Statistical Committee of the Kyrgyz Republic. 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 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 validity of using NLS as a proxy for economic activity in Kyrgyz Republic. The results suggest a significant and positive correlation between NLS intensity and GDP. In Kyrgyz Republic, GDP to NLS elasticity was found to be 0.81 (*an increase in light intensity of 1 percent is associated with a 0.81 percent increase in GDP*). This country snapshot presents its results at city level. Due to measurement errors 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 46 settlements in Kyrgyz Republic as cities. Demographic trends are available for all cities but NLS data analysis is only available for 21 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 most settlements with 30,000 inhabitants or more. For additional information on this ASA please contact Paula Restrepo Cadavid ([prestrepocadavid@worldbank.org](mailto:prestrepocadavid@worldbank.org)) or Sofia Zhukova ([szhukova@worldbank.org](mailto:szhukova@worldbank.org))



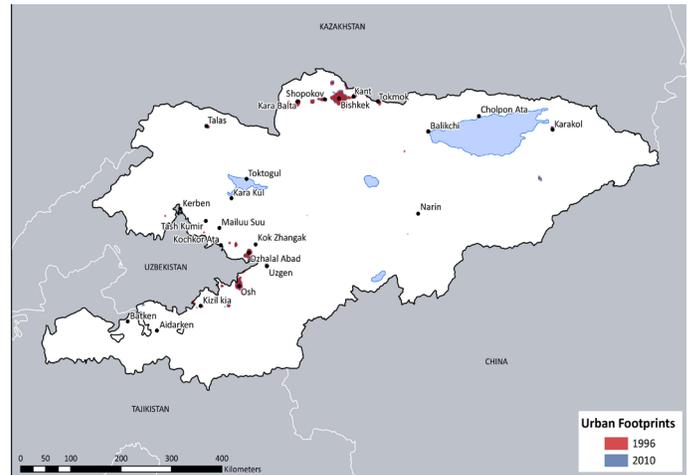
## DEMOGRAPHICS

|  |                 | BEFORE              | RECENTLY            |
|--|-----------------|---------------------|---------------------|
| Fertility Rates                            | Kyrgyz Republic | 3.80 <sup>1</sup>   | 3.20 <sup>2</sup>   |
|  | ECA             | 1.95 <sup>1</sup>   | 1.73 <sup>2</sup>   |
| Life Expectancy                            | Kyrgyz Republic | 67.90 <sup>1</sup>  | 70.20 <sup>2</sup>  |
|  | ECA             | 72.05 <sup>1</sup>  | 76.77 <sup>2</sup>  |
| % of Population Above Age 65               | Kyrgyz Republic | 4.98 <sup>1</sup>   | 11.59 <sup>2</sup>  |
|  | ECA             | 4.17 <sup>1</sup>   | 15.16 <sup>2</sup>  |
| Population Growth (Average Annual %)       | Kyrgyz Republic | 1.22 <sup>3</sup>   | 1.24 <sup>4</sup>   |
|  | ECA             | 0.28 <sup>3</sup>   | 0.32 <sup>4</sup>   |
| Urban Population Growth (Average Annual %) | Kyrgyz Republic | 1.65 <sup>3</sup>   | 2.27 <sup>4</sup>   |
|  | ECA             | 0.41 <sup>3</sup>   | 0.55 <sup>4</sup>   |
| Urbanization Level (%)                     | Kyrgyz Republic | 38.00 <sup>1</sup>  | 35.00 <sup>5</sup>  |
|  | ECA             | 67.30 <sup>1</sup>  | 70.30 <sup>5</sup>  |
| Annual Urbanization Rate (%)               | Kyrgyz Republic | 0.02 <sup>3</sup>   | 0.00 <sup>4</sup>   |
|  | ECA             | -0.03 <sup>3</sup>  | 0.00 <sup>4</sup>   |
| City Average Population                    | Kyrgyz Republic | 40,028 <sup>1</sup> | 62,156 <sup>2</sup> |
|  | ECA             | 72,515 <sup>1</sup> | 75,132 <sup>2</sup> |
| % Cities With More Than 100,000            | Kyrgyz Republic | 4.88 <sup>1</sup>   | 9.37 <sup>2</sup>   |
|  | ECA             | 12.97 <sup>1</sup>  | 20.02 <sup>2</sup>  |
| % Cities With More Than 500,000            | Kyrgyz Republic | 2.44 <sup>1</sup>   | 3.12 <sup>2</sup>   |
|  | ECA             | 2.03 <sup>1</sup>   | 2.27 <sup>2</sup>   |
| % Cities losing Population                 | Kyrgyz Republic | 75.60 <sup>3</sup>  | 42.86 <sup>6</sup>  |
|  | ECA             | 59.58 <sup>3</sup>  | 61.58 <sup>6</sup>  |



## SPATIAL

|   |                 | BEFORE               | RECENTLY             |
|---|-----------------|----------------------|----------------------|
| Built Up Area (100,000km <sup>2</sup> )       | Kyrgyz Republic | 113.28 <sup>7</sup>  | 518.10 <sup>2</sup>  |
|   | ECA             | 156,892 <sup>7</sup> | 288,096 <sup>2</sup> |
| Built Up m <sup>2</sup> Per Capita            | Kyrgyz Republic | 25.79 <sup>7</sup>   | 32.31 <sup>2</sup>   |
|   | ECA             | 186.18 <sup>7</sup>  | 320.49 <sup>2</sup>  |
| Built Up Area Growth (%)                      | Kyrgyz Republic | 357.53 <sup>8</sup>  | 83.59 <sup>8</sup>   |
|   | ECA             | 357.53 <sup>8</sup>  | 83.59 <sup>8</sup>   |
| Built Up m <sup>2</sup> Per Capita Growth (%) | Kyrgyz Republic | 251.14 <sup>8</sup>  | 72.13 <sup>8</sup>   |
|   | ECA             | 251.14 <sup>8</sup>  | 72.13 <sup>8</sup>   |
| Number of Cities in Analysis                  | Kyrgyz Republic | 46 <sup>9</sup>      | 2,712 <sup>9</sup>   |
|   | ECA             | 46 <sup>9</sup>      | 2,712 <sup>9</sup>   |
| Number of Identified Cities (NLS)             | Kyrgyz Republic | 21 <sup>9</sup>      | 3,883 <sup>9</sup>   |
|   | ECA             | 21 <sup>9</sup>      | 3,883 <sup>9</sup>   |
| Number of Growing Cities (NLS Area)           | Kyrgyz Republic | 13 <sup>9</sup>      | 1,645 <sup>9</sup>   |
|   | ECA             | 13 <sup>9</sup>      | 1,645 <sup>9</sup>   |
| Number of Agglomerations (NLS)                | Kyrgyz Republic | 2 <sup>9</sup>       | 352 <sup>9</sup>     |
|   | ECA             | 2 <sup>9</sup>       | 352 <sup>9</sup>     |

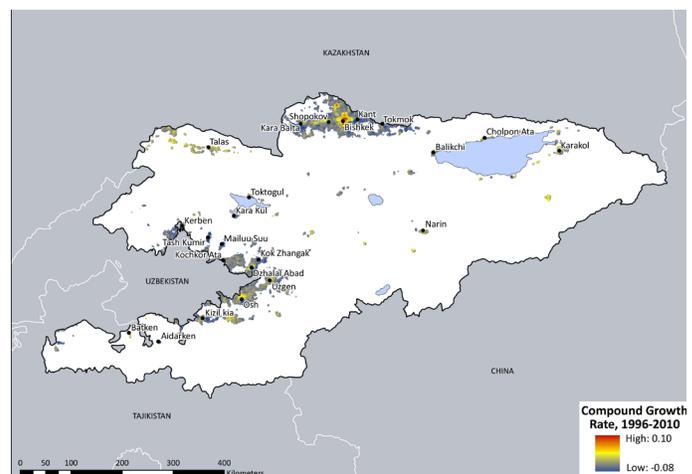


This section uses data from the Global Human Settlement layer (GHSL) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.



## ECONOMICS

|   |                 | BEFORE              | RECENTLY            |
|---|-----------------|---------------------|---------------------|
| Average Annual GDP growth (%)                         | Kyrgyz Republic | -1.59 <sup>3</sup>  | 4.43 <sup>4</sup>   |
|   | ECA             | 2.08 <sup>3</sup>   | 1.54 <sup>4</sup>   |
| Average Annual GDP per capita growth (%)              | Kyrgyz Republic | 2.83 <sup>3</sup>   | 3.13 <sup>4</sup>   |
|   | ECA             | 1.80 <sup>3</sup>   | 1.20 <sup>4</sup>   |
| Estimated contribution of urban GVA to GDP growth (%) | Kyrgyz Republic | 43.44 <sup>4</sup>  | —                   |
|   | ECA             | 43.44 <sup>4</sup>  | —                   |
| Unemployment Rate (%)                                 | Kyrgyz Republic | 8.30 <sup>2</sup>   | 9.45 <sup>2</sup>   |
|   | ECA             | 8.30 <sup>2</sup>   | 9.45 <sup>2</sup>   |
| Poverty rate (% at national poverty line)             | Kyrgyz Republic | 7.70 <sup>2</sup>   | —                   |
|   | ECA             | 7.70 <sup>2</sup>   | —                   |
| Urban to rural GVA ratio                              | Kyrgyz Republic | 7.60 <sup>2</sup>   | —                   |
|   | ECA             | 7.60 <sup>2</sup>   | —                   |
| Urban NLS Intensity Growth (% annual average)         | Kyrgyz Republic | -3.07 <sup>10</sup> | 1.83 <sup>11</sup>  |
|   | ECA             | -3.03 <sup>10</sup> | 6.92 <sup>11</sup>  |
| % City Economies Growing (in NLS intensity)           | Kyrgyz Republic | 5.00 <sup>10</sup>  | 95.00 <sup>11</sup> |
|   | ECA             | 26.58 <sup>10</sup> | 94.42 <sup>11</sup> |
| GDP to NLS Elasticity                                 | Kyrgyz Republic | 0.81 <sup>9</sup>   | 0.55 <sup>9</sup>   |
|   | ECA             | 0.81 <sup>9</sup>   | 0.55 <sup>9</sup>   |



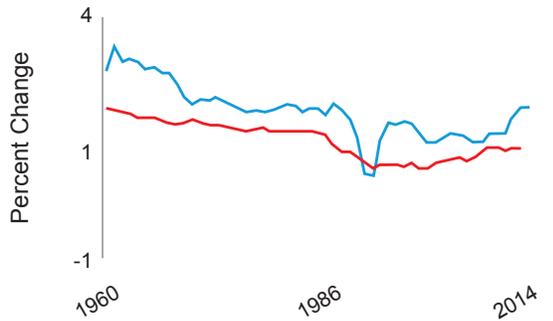
<sup>1</sup> 1989, <sup>2</sup> 2013, <sup>3</sup> 1989-199, <sup>4</sup> 1999-2014, <sup>5</sup> 2014, <sup>6</sup> 1999-2013, <sup>7</sup> 1990, <sup>8</sup> 1990-2013, <sup>9</sup> 1996-2010, <sup>10</sup> 1992-2000, <sup>11</sup> 2000-2012.



## URBANIZATION TRENDS

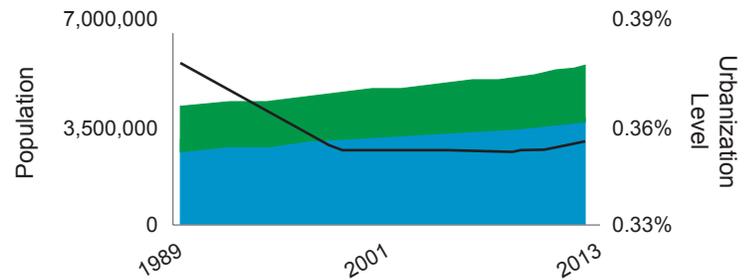
Over the past five decades Kyrgyz Republic has experienced multiple changes in its population dynamics. Beginning with a steady decline of its population growth rate until the 1990s, Kyrgyz Republic has recently recovered and returned to the growth rates it had in previous decades. The country's birth rates began declining in the early 1960s and life expectancy has grown in the last two decades. However, especially when contrasted with other countries from this region, Kyrgyz Republic still has a rather young population and fertility rates remain above replacement rates.

**Urbanization levels remain low, due mainly to the a rapidly growing rural population.** Furthermore, urbanization rates remain low, with an average growth of only 0.075% in the last decade. Between 1989 and 2014 the rural population increased from 2.6 to 3.7 million (by 42 percent), while the urban population increased from 1.6 to 2 million (by 25 percent). The interaction of these dynamics resulted in a decrease in the urbanization levels, going from 38 percent in 1990 to 35 percent in 2014.



Population Growth, 1989–2014

— Kyrgyz Republic — ECA (Developing Only)



Urbanization Trends, 1989–2014

— Rural Population — Urban Population — Urbanization Level

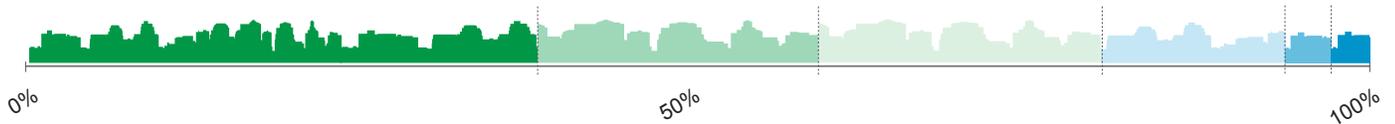


## DEMOGRAPHICS OF THE URBAN SYSTEM

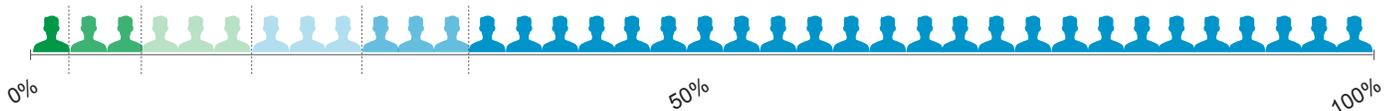
**Kyrgyz Republic's urban system is composed mainly of towns of different sizes but the large majority of the urban population lives in the capital, Bishkek.** This city holds 66 percent of the total urban population. Around 40 percent of the cities have lost population in the last decade. This has been an improvement from the 65 percent of declining cities in the decade prior to that. City population dynamics of growth and decline are not homogeneous across the country. On average, all cities with a population of less than 100,000 have lost population in the last 2 decades, while the major and mid size cities have presented population growth rates of an average of 45 percent. The most dramatic loss of population is observed in small towns (those with populations with less than 10k people), which have lost around 32 percent of its population since 1989.

**There are only 2 agglomerations in the country, by NLS standards, with diverging trends in terms of demographics.** The agglomeration of Dzhahal Abad, has been growing considerably in the city core while population has been declining in the surrounding cities. In contrast, the core of the Kizil kia agglomeration has been losing population while the surrounding areas have been growing considerably.

### DISTRIBUTION OF CITIES BY CITY SIZE: 2013



### URBAN POPULATION DISTRIBUTION BY CITY SIZE: 2013



■ 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<br>2013 | % CHANGE<br>1989–2013 |
|--------------|--------------------|-----------------------|
| Bishkek      | 894,600            | 44.31                 |
| Osh          | 260,400            | 13.65                 |
| Dzhalal Abad | 103,000            | 35.02                 |
| Karakol      | 70,500             | 7.79                  |
| Tokmok       | 55,800             | -23.49                |
| Uzgen        | 52,100             | 52.49                 |
| Kizil kia    | 46,500             | -1.35                 |
| Balikchi     | 44,400             | 3.16                  |
| Kara Balta   | 40,400             | -25.03                |
| Tash Kumir   | 37,200             | -2.81                 |
| Narin        | 36,400             | -13.76                |
| Talas        | 34,100             | 11.73                 |
| Kara Kul     | 23,600             | 6.18                  |

### LARGEST URBAN AGGLOMERATIONS

| AGGLOMERATION<br>MAIN CITY | POPULATION<br>2013 | % CHANGE<br>1989–2013 | CITY<br>COUNT |
|----------------------------|--------------------|-----------------------|---------------|
| Dzhalal Abad               | 174,200            | 3.36                  | 5             |
| Kizil kia                  | 79,200             | 31.94                 | 4             |

### FASTEST GROWING CITIES

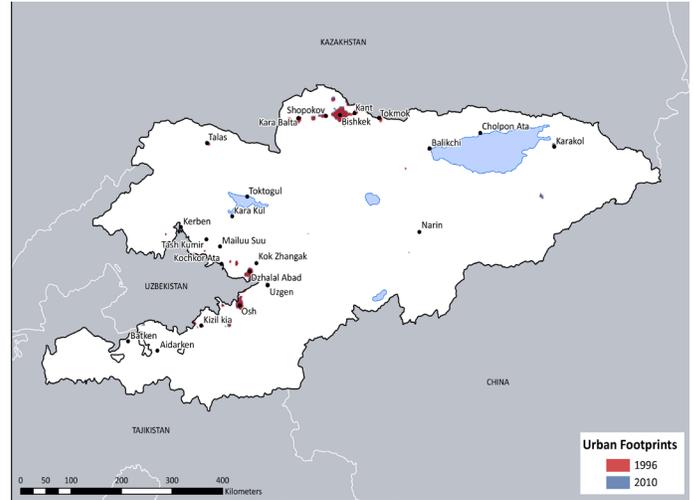
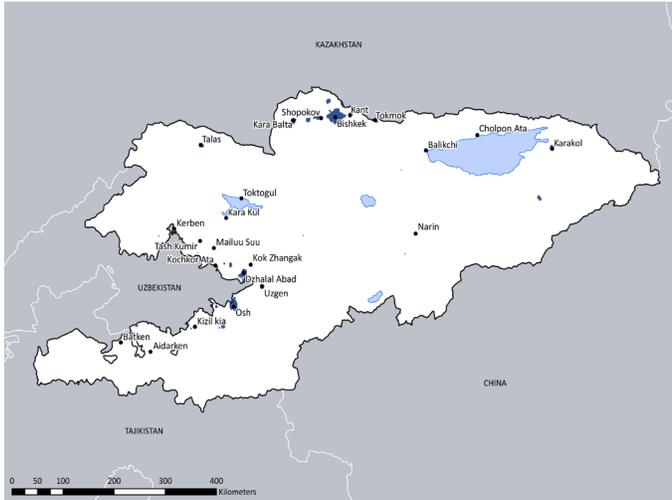
| CITY         | POPULATION<br>2013 | % CHANGE<br>1989–2013 | BELONGS TO AN<br>AGGLOMERATION | AGGLOMERATION |
|--------------|--------------------|-----------------------|--------------------------------|---------------|
| Kadamzhai    | 11,900             | 53.57                 | No                             | N/A           |
| Uzgen        | 52,100             | 52.49                 | No                             | N/A           |
| Bishkek      | 894,600            | 44.31                 | No                             | N/A           |
| Dzhalal Abad | 103,000            | 35.02                 | Yes                            | Dzhalal Abad  |
| Cholpon Ata  | 11,300             | 16.87                 | No                             | N/A           |
| Kara Suu     | 22,100             | 16.84                 | No                             | N/A           |
| Osh          | 260,400            | 13.65                 | No                             | N/A           |
| Talas        | 34,100             | 11.73                 | No                             | N/A           |
| Toktogul     | 17,900             | 9.27                  | No                             | N/A           |
| Karakol      | 70,500             | 7.79                  | No                             | N/A           |
| Kara Kul     | 23,600             | 6.19                  | No                             | N/A           |
| Balikchi     | 44,400             | 3.16                  | No                             | N/A           |
| Kizil kia    | 46,500             | -1.35                 | Yes                            | Kizil kia     |



## SPATIAL TRENDS OF THE URBAN SYSTEM

An important number of cities (39 percent of the identified cities) in Kyrgyz Republic are declining in area. The patterns of spatial growth are strikingly different between growing and declining cities. Growing (*in population*) cities present an average growth in area of 33 percent, while declining cities presented a decrease of 2.41 percent in their area. The spatial growth is also larger in agglomerations than in single cities. This difference is mainly led by growth in the Kizil Kia agglomeration. These results should however be taken with caution, as they might be linked to an increasingly unreliable electricity supply in the country.

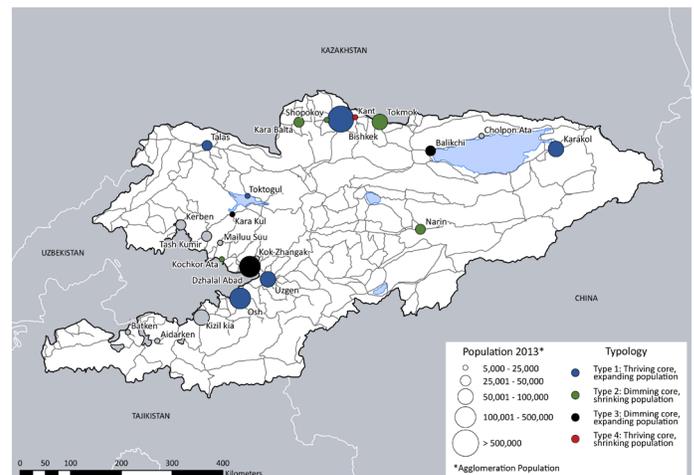
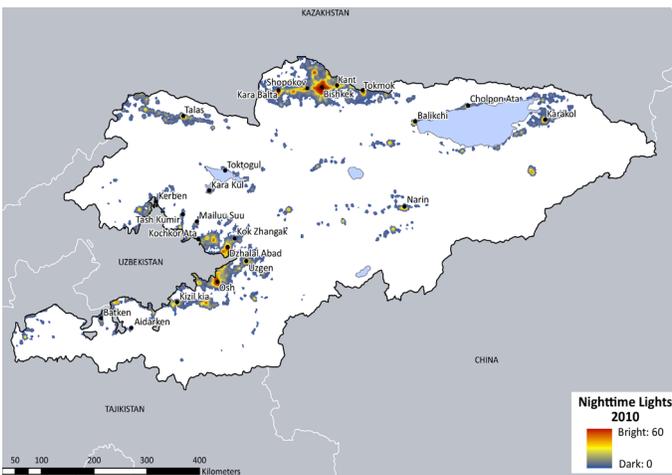
**Note:** Night-lights are used to define urban footprints and follow their change over time. A urban threshold (*above which a certain pixel is considered urban*) is estimated for each country and used to delimit cities' footprints. Agglomerations—as defined by NLS—are composed of cities whose NLS footprint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



## ECONOMICS OF THE URBAN SYSTEM

Urban areas in Kyrgyz Republic play an important role in economic growth. Estimates suggest that urban production is around 7.6 times larger than rural production while urban population is actually 1.8 times smaller than the 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. Just as the demographic and spatial growth analysis shows, the main center of growth in light intensity is in Bishkek, followed by Shopokov, Karakol, Osh, and Narin. 95 percent of the cities grew in economic activity as captured by NLS; in contrast with only 5 percent in the previous decade.

**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 Kyrgyz Republic urban system. **Typology 1** divides cities depending on whether they emit enough light to be considered as urban—by NLS standards. 45.65 percent of the cities in the country were found to emit enough light to be considered urban in both periods (*Identified*); 13.04 percent were only considered urban by NLS standards in 2010 (*Emerging*); None were considered as urban only in the first period of analysis (*Submerging*). **Typology 1** results are similar to those found in other ECA countries with mainly cities above 30,000 inhabitants being considered urban by NLS standards and most cities above 50,000 being Identified. Most of the emerging cities 5 out of 6 are located in the southern West part of the country, indicating a growing are

**Typology 2** classifies Identified cities in four types based on their nighttime trends (*dimming or thriving*) and population trends (*growing or declining*). 40.00 percent of cities have a growing population and growing economic activity (*type 1*). 33.33 percent have a growing population but its economic activity is decreasing (*type 2*). 20.00 percent have a declining population and growing economic activity (*type 3*). 6.67 percent of cities show absolute decline: both the population and the economic activity are declining (*type 4*).

**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.

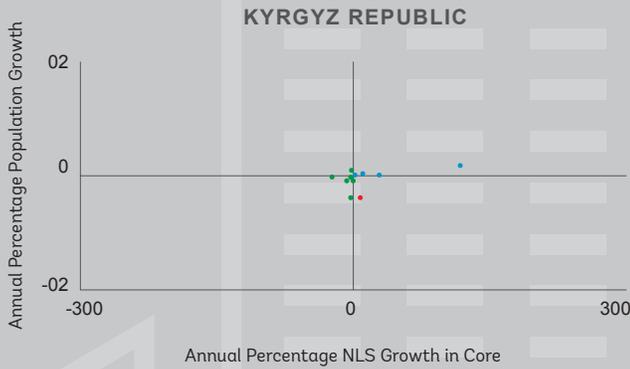
| TYPOLOGY 1     |   |        |            |
|----------------|---|--------|------------|
| TYPOLGY 1      | DESCRIPTION   | NUMBER | PERCENTAGE |
| Identified     | City emits enough light in both 1996 & 2010         | 21     | 45.65      |
| Emerging       | City emits enough light in only 2010                | 6      | 13.04      |
| Submerging     | City emits enough light only in 1996                | 0      | 0.00       |
| Non-Identified | City does not emit enough light in both 1996 & 2010 | 19     | 41.30      |

| TYPOLOGY 2     |  |        |            |
|----------------|--|--------|------------|
| TYPOLGY 2      | DESCRIPTION  | NUMBER | PERCENTAGE |
| Type 1 (Blue)  | Growing population & growing economic activity ( <b>thriving core</b> )    | 6      | 40.00      |
| Type 2 (Green) | Declining population & declining economic activity ( <b>dimming core</b> ) | 5      | 33.33      |
| Type 3 (Black) | Growing population & declining economic activity ( <b>thriving core</b> )  | 3      | 20.00      |
| Type 4 (Red)   | Declining population & growing economic activity ( <b>dimming core</b> )   | 1      | 6.67       |

|  | <b>TYPE 1:</b><br>Growing Population<br>& Growing<br>Economic Activity | <b>TYPE 2:</b><br>Declining Population<br>& Declining<br>Economic Activity | <b>TYPE 3:</b><br>Growing Population<br>& Declining<br>Economic Activity | <b>TYPE 4:</b><br>Declining Population<br>& Growing<br>Economic Activity |
|--|--|--|--|--|
| Population 2014<br>(000s)                            | <b>221.66</b> (341.36)   | <b>31.36</b> (19.14)   | <b>80.73</b> (81.60)   | <b>20.80</b> (N/A)   |
| Average Annual<br>Population Growth<br>(% 2002-2014) | <b>0.96</b> (0.82)   | <b>-0.63</b> (0.37)  | <b>0.17</b> (0.07)   | <b>-0.55</b> (N/A)   |
| Total NLS Value in<br>2010 (000s)                    | <b>11.66</b> (21.50)   | <b>1.32</b> (0.97)   | <b>1.84</b> (2.42)   | <b>1.67</b> (N/A)  |
| NLS per Capita<br>(2010)                             | <b>0.03</b> (0.01)   | <b>0.07</b> (0.09)   | <b>0.01</b> (0.01)   | <b>0.08</b> (N/A)  |
| NLS Growth<br>(% 2000–2010)                          | <b>32.50</b> (30.52)   | <b>5.66</b> (9.31)   | <b>-3.64</b> (4.71)  | <b>-1.35</b> (N/A)   |
| Examples<br>of Cities                                | <b>Karakol, Osh, Bishkek</b>   | <b>Narin, Tokmo, Kara Balta</b>  | <b>Dzhalal Abad,<br/>Kara Kul, Balikchi</b>                              | <b>Kant</b>  |

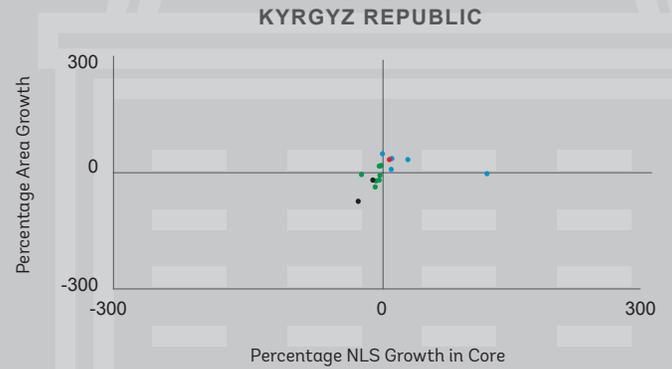
A third dimension is added to **Typology 2** classification to review the interaction between spatial, economic and demographic trends across the urban system. This reveals that most of the spatial growth corresponds to actual economic growth as cities whose footprint is growing have also experienced an increase in the nighttime lights emitted in the core of the city. Also, all **Type 1 cities** (*growing in population and economic activity*) are also growing in area. The graphs below present the distribution of cities in across these 3 dimensions and their interactions. The table presents summary statistics for **Typology 2 cities**.

### POPULATION AND ECONOMIC DYNAMICS\*



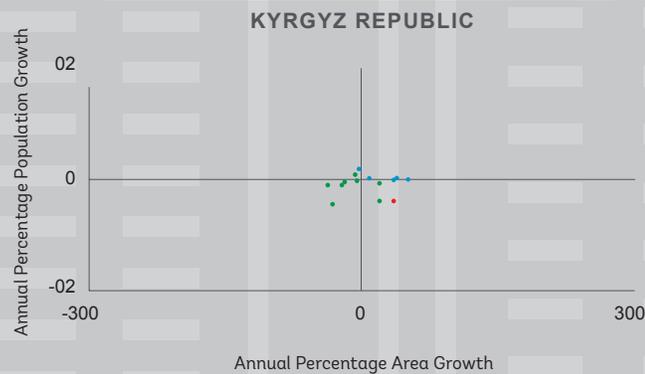
\* Econ growth is NLS growth (1996–2010);  
Population growth is annual avg (1989–2013).

### 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 (1989–2013).

■ **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

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Urbanization level and rates remain low in the Kyrgyz Republic, and this is partly due to a considerable growth of the rural population vis-à-vis the urban population. Despite this, an important urban population growth is observed and concentrated—mainly in the larger cities. Bishkek, the largest city and capital is home to a large proportion of the urban population (*66 percent*) and is also among the fastest growing cities in the country.

Despite still being a predominantly rural, cities play a fundamental role in the country's economy. Estimates suggest that urban areas are much more productive than rural areas and remain important contributors to the economy. Furthermore cities appear to be doing much better in the past decade compared to the previous decade of transition—where only 5 percent grew in light intensity. The number of cities losing population also declined significantly in the last decade when comparing to the first decade of transition (*1990-2000*).

This analysis of the urban system reveals a rather even distribution of the cities across different types (*although these can only be measured for a fraction of identified cities*). The majority of cities that were identified (*44 percent*) are growing in population and growing in economic activity. This type (*type 1*) is composed of urban centers that are large contributors to the economy and continue to be pillars of economic growth and population growth. The second place, with 33 percent, is taken by cities declining in population and also in economic activity (*Type 2*). A third type is composed of cities which are growing in population but declining in economic activity (*Type 3*).

Kyrgyz Republic has a long way to urbanize before reaching urbanization levels on par with those throughout the region. This suggests that there is an abundance of opportunity for the country to shape urban development and foster economic activities in Kyrgyz Republic's cities. However, to achieve this there must be a minimum standard of infrastructure (*reliable provision of electricity, access to basic services, etc*) available to ensure adequate living conditions and to support local economic development.

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