

# CITIES IN EUROPE AND CENTRAL ASIA

## TAJIKISTAN



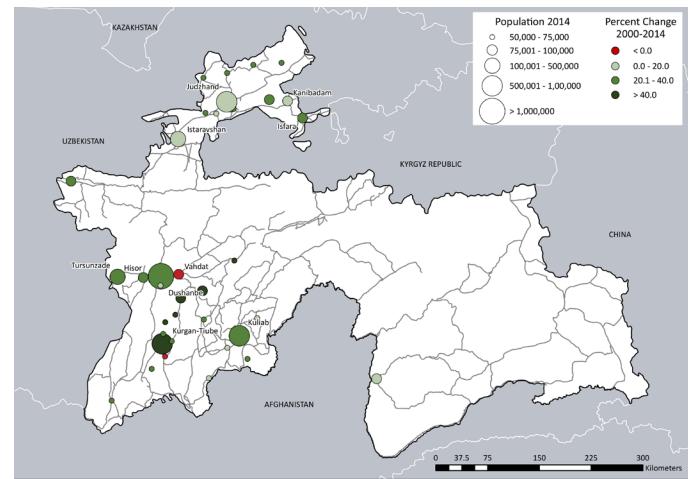
### METHODOLOGY

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 Tajikistan. The results suggest a significant and positive correlation between NLS intensity and GDP. In Tajikistan, GDP to NLS elasticity was found to be 0.92 (*an increase in light intensity of 1 percent is associated with a 0.92 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 38 settlements in Tajikistan as cities. Demographic trends are available for all 38 cities but NLS analysis is only available for 12 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](mailto:prestrepocadavid@worldbank.org)) or Sofia Zhukova ([szhukova@worldbank.org](mailto:szhukova@worldbank.org))



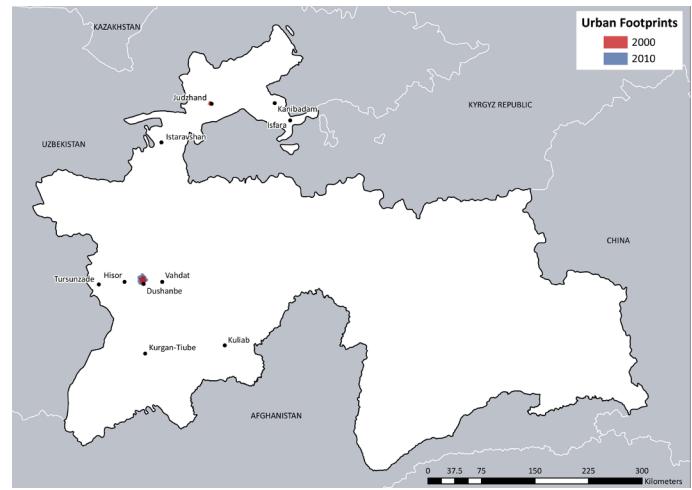
## DEMOGRAPHICS

|  |            | BEFORE              | RECENTLY            |
|--|------------|---------------------|---------------------|
| Fertility Rates                            | Tajikistan | 3.96 <sup>1</sup>   | 3.51 <sup>2</sup>   |
|  | ECA        | 1.55 <sup>1</sup>   | 1.72 <sup>2</sup>   |
| Life Expectancy                            | Tajikistan | 63.69 <sup>1</sup>  | 69.40 <sup>2</sup>  |
|  | ECA        | 73.02 <sup>1</sup>  | 76.77 <sup>2</sup>  |
| % of Population Above Age 65               | Tajikistan | 3.54 <sup>1</sup>   | 3.05 <sup>2</sup>   |
|  | ECA        | 13.35 <sup>1</sup>  | 15.37 <sup>2</sup>  |
| Population Growth (Average Annual %)       | Tajikistan | 2.06 <sup>3</sup>   |                     |
|  | ECA        | 0.31 <sup>3</sup>   |                     |
| Urban Population Growth (Average Annual %) | Tajikistan | 2.18 <sup>3</sup>   |                     |
|  | ECA        | 0.55 <sup>3</sup>   |                     |
| Urbanization Level (%)                     | Tajikistan | 26.48 <sup>1</sup>  | 26.69 <sup>2</sup>  |
|  | ECA        | 68.33 <sup>1</sup>  | 70.52 <sup>2</sup>  |
| Annual Urbanization Rate (%)               | Tajikistan | 0.05 <sup>3</sup>   |                     |
|  | ECA        | 0.23 <sup>3</sup>   |                     |
| City Average Population                    | Tajikistan | 40,755 <sup>1</sup> | 52,700 <sup>2</sup> |
|  | ECA        | 61,105 <sup>1</sup> | 64,914 <sup>2</sup> |
| % Cities With More Than 100,000            | Tajikistan | 5.26 <sup>1</sup>   | 10.52 <sup>2</sup>  |
|  | ECA        | 10.41 <sup>1</sup>  | 10.57 <sup>2</sup>  |
| % Cities With More Than 500,000            | Tajikistan | 2.63 <sup>1</sup>   | 2.63 <sup>2</sup>   |
|  | ECA        | 1.56                | 1.83 <sup>2</sup>   |
| % Cities losing Population                 | Tajikistan | 5.26 <sup>3</sup>   |                     |
|  | ECA        | 61.07 <sup>3</sup>  |                     |



## SPATIAL

|   |            | BEFORE               | RECENTLY             |
|---|------------|----------------------|----------------------|
| Built Up Area (100,000km <sup>2</sup> )       | Tajikistan | 151.79 <sup>1</sup>  | 321.96 <sup>4</sup>  |
|   | ECA        | 213,244 <sup>1</sup> | 288,046 <sup>4</sup> |
| Built Up m <sup>2</sup> Per Capita            | Tajikistan | 24.54 <sup>1</sup>   | 39.23 <sup>4</sup>   |
|   | ECA        | 247.39 <sup>1</sup>  | 320.49 <sup>4</sup>  |
| Built Up Area Growth (%)                      | Tajikistan | 112.58 <sup>5</sup>  |                      |
|   | ECA        | 35.07 <sup>5</sup>   |                      |
| Built Up m <sup>2</sup> Per Capita Growth (%) | Tajikistan | 59.86 <sup>5</sup>   |                      |
|   | ECA        | 29.54 <sup>5</sup>   |                      |
| Number of Cities in Analysis                  | Tajikistan | 38 <sup>3</sup>      |                      |
|   | ECA        | 5,549 <sup>3</sup>   |                      |
| Number of Identified Cities (NLS)             | Tajikistan | 12 <sup>6</sup>      |                      |
|   | ECA        | 3,637 <sup>6</sup>   |                      |
| Number of Growing Cities (NLS Area)           | Tajikistan | 3 <sup>6</sup>       |                      |
|   | ECA        | 1,804 <sup>6</sup>   |                      |
| Number of Agglomerations(NLS)                 | Tajikistan | 1 <sup>6</sup>       |                      |
|   | ECA        | 352 <sup>6</sup>     |                      |

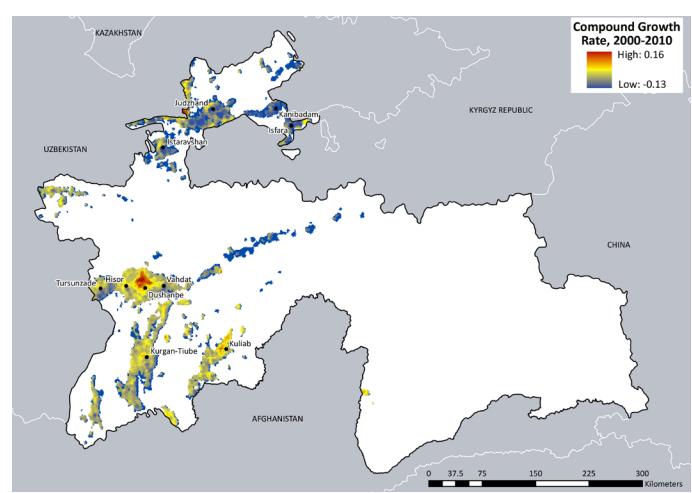


This section uses data from the Global Human Settlement layer (GHSL) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.



## ECONOMICS

|   |            | BEFORE             | RECENTLY |
|---|------------|--------------------|----------|
| Average Annual GDP growth (%)                         | Tajikistan | 7.95 <sup>3</sup>  |          |
|   | ECA        | 1.75 <sup>3</sup>  |          |
| Average Annual GDP per capital growth (%)             | Tajikistan | 5.76 <sup>3</sup>  |          |
|   | ECA        | 1.38 <sup>3</sup>  |          |
| Estimated contribution of urban GVA to GDP growth (%) | Tajikistan | 54.47 <sup>7</sup> |          |
|   | ECA        | —                  |          |
| Unemployment Rate (%)                                 | Tajikistan | 10.90 <sup>2</sup> |          |
|   | ECA        | 9.60 <sup>2</sup>  |          |
| Poverty rate (% at national poverty line)             | Tajikistan | 32.0 <sup>8</sup>  |          |
|   | ECA        | —                  |          |
| Urban to rural GVA ratio                              | Tajikistan | 2.45 <sup>4</sup>  |          |
|   | ECA        | —                  |          |
| Urban NLS Intensity Growth (% annual average)         | Tajikistan | -0.73 <sup>6</sup> |          |
|   | ECA        | 6.92 <sup>6</sup>  |          |
| % City Economies Growing (in NLS intensity)           | Tajikistan | 30.00 <sup>6</sup> |          |
|   | ECA        | 95.92 <sup>6</sup> |          |
| GDP to NLS Elasticity                                 | Tajikistan | 0.92 <sup>8</sup>  |          |
|   | ECA        | 0.37 <sup>8</sup>  |          |



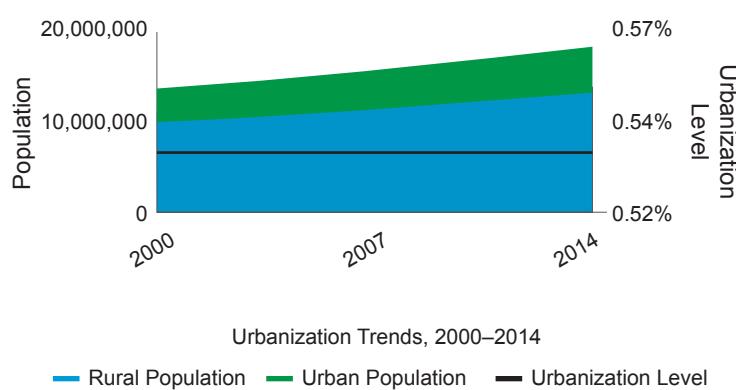
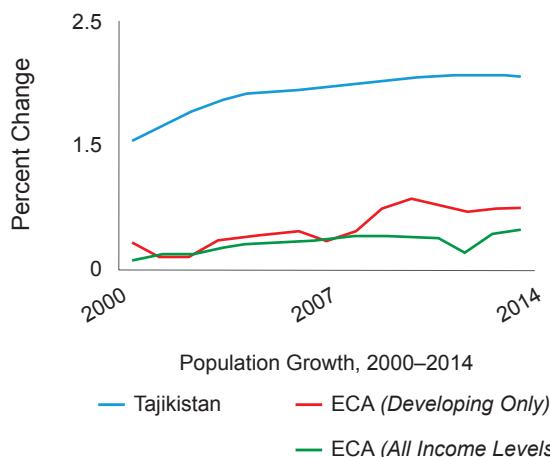
<sup>1</sup> 2000, <sup>2</sup> 2014, <sup>3</sup> 2000–2014, <sup>4</sup> 2013, <sup>5</sup> 2000–2013, <sup>6</sup> 2000–2010, <sup>7</sup> 2011–2013, <sup>8</sup> 1996–2010.



## URBANIZATION TRENDS

**Tajikistan's population has increased over the last years.** Between 2000 and 2014 Tajikistan's population grew 34.10 percent. During this period Tajikistan averaged an annual population growth rate of 2.05 percent with a high of 2.26 percent between 2011 and 2012. ECA's average annual population growth rate was only 0.31 percent in the same period.

**Despite an increasing population Tajikistan's urbanization level increased only by 0.21 percent between 2000 and 2014.** Tajikistan's urbanization level, remains low, reaching only 26.69 percent in 2014 compared to ECA's average of 70.52 percent. This results from the urban population growing at similar rates than the rural population—and suggest that only a very small share of the rural population is moving to urban areas in Tajikistan.

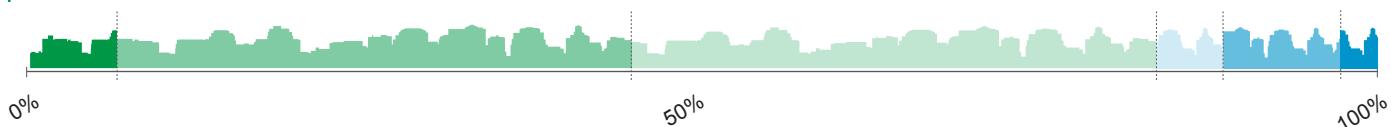


## DEMOGRAPHICS OF THE URBAN SYSTEM

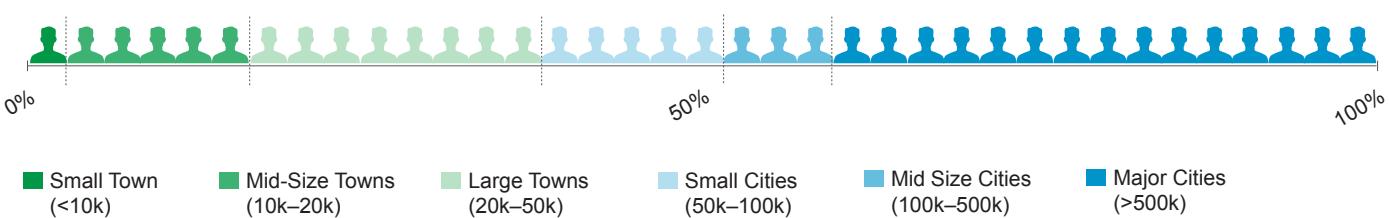
**The majority of cities in Tajikistan have less than 50 thousand inhabitants.** Despite this, an important share of the urban population (39.37 percent in 2014) live in cities with more than 500 thousand inhabitants although these cities make-up only 2.63 percent of Tajikistan's urban system. The average size of Tajikistan's cities increased by 11,945 between 2000 and 2014 up to 52,700 inhabitants. In the same period the percentage of cities with more than 100 thousand inhabitants doubled to 10.52 percent (*from 2 to 4 cities*). There is only one agglomeration in Tajikistan, according to the nighttime lights threshold used in this analysis. This agglomeration is composed of Khujand and surrounding cities.

**Despite the country's low urbanization levels and slow urbanization rates, many cities in Tajikistan are rapidly growing.** The cities in Southwestern Tajikistan, around Dushanbe, underwent an average population growth of 40.10 percent between 2000 and 2014 (*please refer to population change map on page 1*). In the North, the cities around Khujand were on average growing slower than the cities around Dushanbe, averaging 25.72 percent population growth between 2000 and 2014. Rogun and Kurgan-Tube both experienced population growth above 65.00 percent between 2000 and 2014. Dushanbe, the largest city by population in Tajikistan, grew by 36.13 percent in population between 2000 and 2014.

### DISTRIBUTION OF CITIES BY CITY SIZE: 2014



### URBAN POPULATION DISTRIBUTION BY CITY SIZE: 2014



| LARGEST CITIES BY POPULATION |                    |                       | LARGEST URBAN AGGLOMERATIONS |                    |                       |               |
|------------------------------|--------------------|-----------------------|------------------------------|--------------------|-----------------------|---------------|
| CITY                         | POPULATION<br>2014 | % CHANGE<br>2000–2014 | AGGLOMERATION<br>MAIN CITY   | POPULATION<br>2014 | % CHANGE<br>2000–2014 | CITY<br>COUNT |
| Dushanbe                     | 788,600            | 36.13                 | Khujand                      | 223,600            | 19.31                 | 3             |
| Khujand                      | 172,700            | 16.85                 |                              |                    |                       |               |
| Kurgan-Tube                  | 102,900            | 65.70                 |                              |                    |                       |               |
| Kulaiab                      | 101,200            | 27.14                 |                              |                    |                       |               |
| Istaravshan                  | 59,900             | 15.64                 |                              |                    |                       |               |
| Tursunzade                   | 52,400             | 35.40                 |                              |                    |                       |               |
| Kanibadam                    | 49,700             | 9.96                  |                              |                    |                       |               |
| Isfara                       | 46,900             | 25.40                 |                              |                    |                       |               |
| Kairakkum                    | 43,800             | 23.73                 |                              |                    |                       |               |
| Vahdat                       | 42,200             | -7.46                 |                              |                    |                       |               |
| Pendzhikent                  | 40,600             | 21.92                 |                              |                    |                       |               |
| Yovon                        | 33,200             | 49.55                 |                              |                    |                       |               |
| Chkalovsk                    | 32,500             | 32.11                 |                              |                    |                       |               |
| Horog                        | 28,900             | 4.71                  |                              |                    |                       |               |
| Nurek                        | 28,100             | 41.92                 |                              |                    |                       |               |

| FASTEST GROWING CITIES |                    |                       |                                |               |
|------------------------|--------------------|-----------------------|--------------------------------|---------------|
| CITY                   | POPULATION<br>2014 | % CHANGE<br>2000–2014 | BELONGS TO AN<br>AGGLOMERATION | AGGLOMERATION |
| Rogun                  | 15,000             | 78.57                 | No                             | N/A           |
| Kurgan-Tube            | 102,900            | 65.70                 | No                             | N/A           |
| Dusti                  | 16,500             | 50.00                 | No                             | N/A           |
| Yovon                  | 33,200             | 49.55                 | No                             | N/A           |
| Sharora                | 12,700             | 45.98                 | No                             | N/A           |
| Zafarobod              | 17,200             | 43.33                 | No                             | N/A           |
| Nurek                  | 28,100             | 41.92                 | No                             | N/A           |
| Sarband                | 15,800             | 39.82                 | No                             | N/A           |
| Shaydon                | 15,300             | 36.61                 | No                             | N/A           |
| Dushanbe               | 788,600            | 36.13                 | No                             | N/A           |
| Kolkhozobod            | 17,500             | 35.66                 | No                             | N/A           |
| Tursunzade             | 52,400             | 35.40                 | No                             | N/A           |
| Kuybyshevsk            | 12,700             | 35.11                 | No                             | N/A           |
| Danghara               | 25,000             | 33.69                 | No                             | N/A           |
| Taboshar               | 15,900             | 32.50                 | No                             | N/A           |

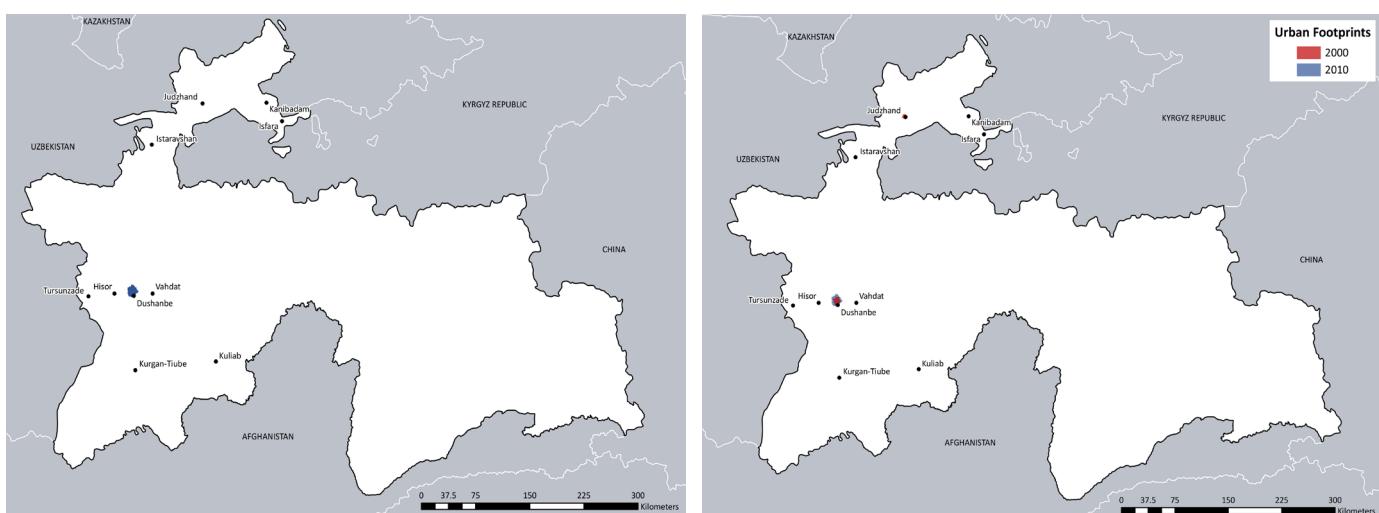


## SPATIAL TRENDS OF THE URBAN SYSTEM

**Tajikistan's vast land mass is not densely populated.** Given the mountainous terrain of Eastern Tajikistan, most of the cities in the country are concentrated in the west. The Gorno-Badakhshan region, which constitutes a large share of Tajikistan's landmass on the east, is largely uninhabited. Horog, the largest city in the Gorno-Badakhshan region with a population of 28,900, does not emit enough light for its footprint to be detected by the nighttime lights threshold used in this analysis. Horog's population grew by 4.71 percent between 2000 and 2014.

**Between 2000 and 2014, 70.00 percent of the cities identified by the nighttime lights threshold used in this analysis decreased in area.** The mean area change for this group was -35.50 percent. Khujand and Tursunzade, two cities whose populations grew between 2000 and 2014, have experienced reductions in their areas of 36.65 and 44.88 percent, respectively. Since area is determined by the nighttime lights emitted by a city, unreliable provision of electricity may be responsible for the dramatic reductions in area observed in this analysis and may not correspond to actual changes in the built-up area. As such, in Tajikistan, a reduction in area does not necessarily indicate that the city no longer exist—instead, it may indicate that its lights are no longer visible or have decreased in intensity due to unreliable electricity provision. Dushanbe, Kulab and Kurgan-Tube are the only cities identified by the nighttime lights threshold used in this analysis that grew in area. Kulab grew 47.25 percent, Dushanbe grew 35.51 percent and Kurgan-Tube grew 34.66 percent. All three cities are located in southwestern Tajikistan.

**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.

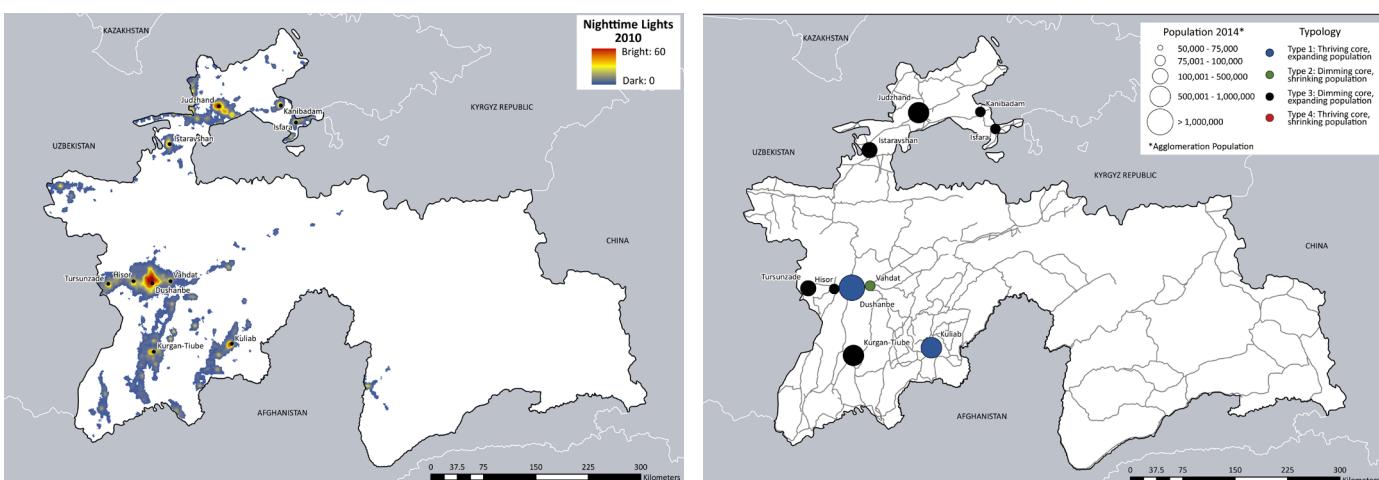


## ECONOMICS OF THE URBAN SYSTEM

**Tajikistan is still primarily rural** Between 2011 and 2013 urban sectors accounted for an estimated 54.47 percent of the growth in Tajikistan's gross value added. Unlike other countries in ECA, urban gross value added in Tajikistan does not account for the lion's share of gross value added growth—which can be explained by Tajikistan's rural character. Despite the country's rural character, in 2013 the urban to rural gross value added was 2.45 while the urban to rural population ratio was 0.36 indicating that urban areas are more productive than rural areas even though they do not constitute an overwhelming share of the economy's growth.

According to the nighttime lights threshold used in this analysis, only 30.00 percent of the cities in Tajikistan are growing in nighttime lights between 2000 and 2010. The small number of cities growing in nighttime lights may be linked to unreliable electricity provision, which could in turn have an impact on economic outputs in Tajikistan.

**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 Tajikistan's urban system. Typology divides cities depending on whether they emit enough light to be considered as urban in 2000 and in 2010. In Tajikistan, 31.58 percent of the cities emitted enough light to be considered urban in both periods (*identified*), 10.53 percent were considered urban only in 2000 (*submerging*) and the remaining 57.89 percent were not considered urban in both periods (*not identified*).

Typology 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*) (please see page 3 for map of typology 2 cities). In Tajikistan, 20.00 percent of the identified cities have a growing population and growing economic activity (type 1). **Type 1 cities** are Kulab and Dushanbe. One city, Vahdat, has dimming lights and a declining population (type 2). 70.00 percent of cities have dimming lights and a growing population (type 3). **Type 3 cities** include Kurgan-Tube, Khujand and Tursunzade. There are no identified cities in Tajikistan with a declining population and growing economic activity (type 4). The two **type 2 cities**, Dushanbe and Kulab, are both located in the Southwest. 4 of the 7 **type 3 cities** are located in the Northwestern part of Tajikistan around Khujand. Kurgan-Tube, a **type 3** city whose lights are dimming in its urban core, has in fact grown in nighttime light footprints. The intensity of light emitted by these newly visible areas have had a net positive effect on nighttime lights growth in Kurgan-Tube. However, since the **typology 2 classification** is determined by the change in brightness only in the urban core Kurgan-Tube is classified as a city growing in population and declining in economic activity.

**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 2000 & 2010         | 12     | 31.58      |
| Emerging       | City emits enough light in only 2010                | 0      | 0.00       |
| Submerging     | City emits enough light only in 2000                | 4      | 10.53      |
| Non-Identified | City does not emit enough light in both 2000 & 2010 | 22     | 57.89      |

| TYPOLOGY 2     |  |        |            |
|----------------|--|--------|------------|
| TYPOLOGY 2     | DESCRIPTION  | NUMBER | PERCENTAGE |
| Type 1 (Blue)  | Growing population & growing economic activity ( <i>thriving core</i> )    | 2      | 20.00      |
| Type 2 (Green) | Declining population & declining economic activity ( <i>dimming core</i> ) | 1      | 10.00      |
| Type 3 (Black) | Growing population & declining economic activity ( <i>thriving core</i> )  | 7      | 70.00      |
| Type 4 (Red)   | Declining population & growing economic activity ( <i>dimming core</i> )   | 0      | 0.00       |

|  | TYPE 1:<br>Growing Population<br>& Growing<br>Economic Activity | TYPE 2:<br>Declining Population<br>& Declining<br>Economic Activity | TYPE 3:<br>Growing Population<br>& Declining<br>Economic Activity | TYPE 4:<br>Declining Population<br>& Growing<br>Economic Activity |
|--|---|---|---|---|
| Population 2014<br>(000s)                            | <b>444.90</b> (486.06)  | <b>42.20</b> (N/A)  | <b>80.33</b> (67.26)  | <b>N/A</b> (N/A)  |
| Average Annual<br>Population Growth<br>(% 2002-2014) | <b>2.25</b> (0.45)  | <b>-0.53</b> (N/A)  | <b>2.02</b> (1.31)  | <b>N/A</b> (N/A)  |
| Total NLS Value in<br>2010 (000s)                    | <b>13.21</b> (16.28)  | <b>0.62</b> (N/A)   | <b>0.94</b> (1.37)  | <b>N/A</b> (N/A)  |
| NLS per Capita<br>(2010)                             | <b>0.02</b> (0.10)  | <b>0.00</b> (N/A)   | <b>0.01</b> (0.00)  | <b>N/A</b> (N/A)  |
| NLS Growth<br>(% 2000–2010)                          | <b>50.80</b> (36.48)  | <b>-13.76</b> (N/A)   | <b>-23.00</b> (21.21)   | <b>N/A</b> (N/A)  |
| Examples<br>of Cities                                | <b>Kulab, Dushanbe</b>  | <b>Vahdat</b>   | <b>Kurgan-Tube, Khujand</b>                                       | <b>N/A</b>  |

A spatial component added to the **Typology 2** classification provides insight into the interaction between spatial, economic and demographic trends across Tajikistan's urban system. Adding the spatial element reveals that Dushanbe, Kulob and Kurgan-Tube are growing in area. The remaining identified cities, which are **type 2** and **type 3** cities, are all contracting in nighttime lights footprint. Inefficiencies in the provisions of electricity in Tajikistan may be responsible for the dramatic reduction in area captured by satellite imagery used in this analysis.





## CONCLUSIONS

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Tajikistan's population has increased by an average of 2.05 percent per year over the last 14 years. The cities located in the Districts of Republican Subordination, which include Dushanbe, the capital of Tajikistan, have concentrated the bulk of population growth growing an average of 32.88 percent over the 14 years used in this analysis. Cities in Khatlon, the region directly below the Districts of Republican Subordination, grew by 28.39 percent between 2000 and 2014. Kurgan-Tube located in Khatlon grew 65.70 percent. Finally, cities located in the Soghd region, located in the North grew by 25.97 percent. Despite an increasing urban population, Tajikistan urbanization levels are still very low (*only reached 26.69 in 2014*). The low urbanization level stems from similar growth rates of the urban and rural population. As such, although Tajikistan is urbanizing it is doing so extremely slowly.

There is only one agglomeration in Tajikistan that is based around Khujand in northern Tajikistan. Khujand's agglomeration grew 22.67 percent between 2000 and 2014, with the two smaller cities in the agglomeration — Chkalovsk and Ghafurov, population 32,500 and 18,400 respectively in 2014— undergoing greater growth than Khujand. None of the cities in Khujand's agglomeration were amongst the fastest growing cities in Tajikistan.

Estimates suggest that urban sectors in Tajikistan are significantly more productive than rural sectors. In 2013, the estimated urban to rural GVA was 2.45, compared to a urban to rural population ratio of 0.36. Finally, there is a widespread contraction in the nighttime light footprints of Tajikistan's cities. Between 2000 and 2014, 70.00 percent of the cities identified by the nighttime lights threshold used in this analysis decreased in nighttime light footprint. Cities like Khujand and Tursunzade all witnessed a dramatic reduction in their city areas. Power outages and unreliable delivery of electricity in Tajikistan may be responsible for this.

Tajikistan has a long way to urbanize before reaching urbanization levels on par with those throughout the region. This suggest that there is an abundance of opportunity for the country to shape urban development and foster economic activities in Tajikistan'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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