

# Urban Agglomerations and Methods of Delimitation

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**Abstract:** The article presents the existing approaches to defining the boundaries of urban agglomerations, and the debatable state of this issue is noted. The authors analyzed the current options for the delimitation of urban agglomerations in various countries.

**Key words:** urbanization, agglomeration, delimitation methodology, core, suburban area, labor pendulum migration.

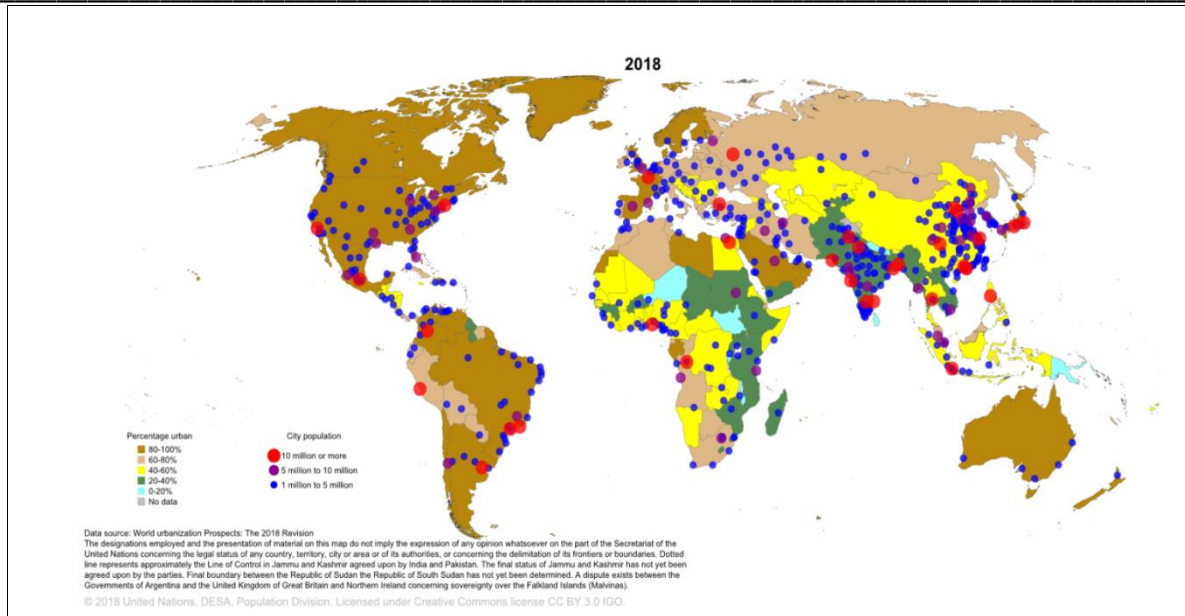
## Introduction.

Urban agglomerations, as complex territorial forms of settlement, appeared in the XIX century and have been studied since the middle of the last century as an independent object of scientific research. However, today the development of urban agglomerations is considered one of the most complex problems of modern settlements. At this point, it is worth noting that in urbanized areas, the population and economic entities are increasingly moving beyond the city administrative boundaries. As a result of this, we can observe the vertical and horizontal expansion of large cities, that is, the formation of urban agglomerations. In this regard, the task of determining agglomerations and their boundaries (delimitation) has become important.

As noted, the initial approaches to the study of the problems of urban agglomerations were made by geographers, urbanists from the 50s of the last century. By the 20th century, the emergence of many large and millionaire cities, such as satellite cities, resulted in the development and continuous expansion of suburban areas. This in turn created the need to study the complex territorial systems of settlement and their interdependence. Although the boundaries of urban agglomeration were carried out in different ways, relying on various factors, but nevertheless there is no generally accepted methodology for delimitation to many countries of the world. In general, when determining the boundaries of agglomeration and substantiating promising directions of its development, it is important to analyze socio-economic and environmental problems.

## Main part.

Overseas the actual aspects of delimitation of agglomerations N.Andersson, A.Areallanoa, D.Batten, R.Boa, M.Vleden, L.Xertzog, J.Le Glais, scientists such as have researched [10]. Many scholars are particularly concerned with, P. M. Polyan, N. I. Naymark and I. N. Zaslavskiy [1] proposals have been made by the lar to include a system of settlements in the category of urban agglomerations if there are at least two cities around the central city.



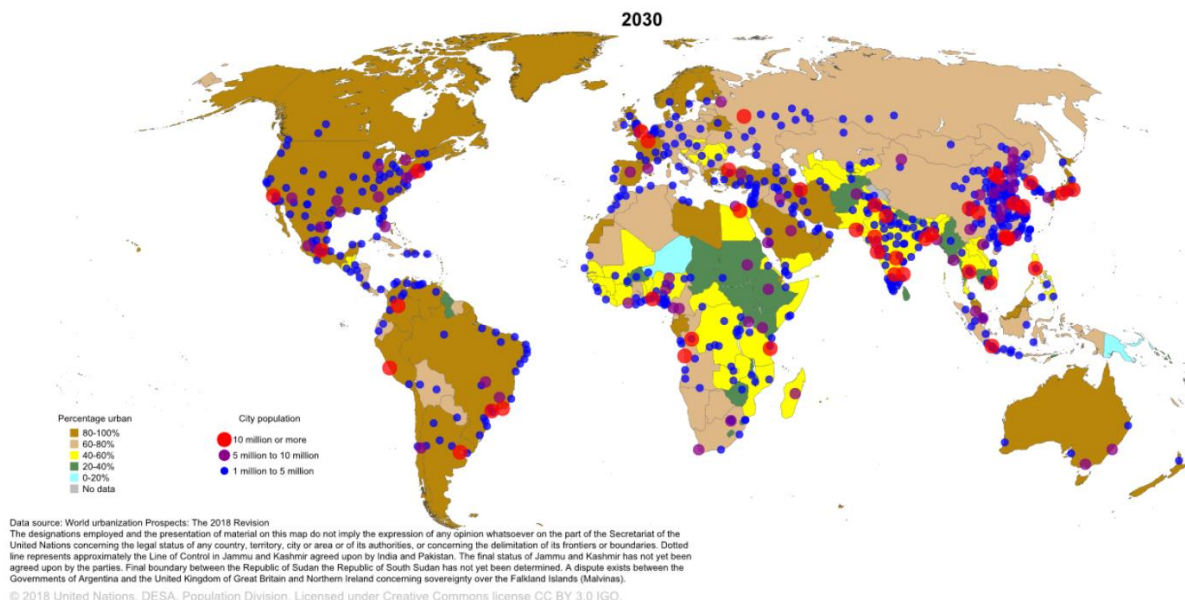
Figure

1. The transformation of urbanization processes and urban agglomerations 2018.

Source: <https://population.un.org/wup/Maps/>

According to World urbanization Prospects, when world-wide urbanization processes and changes in urban agglomerations are analyzed

Figure 2. The forecast of changes in urbanization processes and urban agglomerations is 2030.



Source: <https://population.un.org/wup/Maps/>

In 2018, the number of agglomerations with more than 10 million people was 37, and this indicator is expected to increase to 42 in 2030 [9] (pictures 1-2). In accordance with this, two countries, namely Niger and Papua New Guinea, where the urbanization level will reach 20% in 2030, can be noted. Countries with 20-40 percent urbanization include Chad, Sudan, South Sudan, Mar, Somalia, Zimbabwe, Afghanistan, Pakistan, Sri Lanka from Asia, Myanmar, Guyana from Latin America.

It should be said that a group of researchers [8] approach the classification (identification) of agglomerations in relation to the population. In this case, agglomerations are small (50 thousand inhabitants), medium (50-120), large (120-500), largest (500-1000); large (1000-5000); divided into the largest (more than 5000) [8].

At the same time, most scientists use the existence of a core city, pendulum migration, existing population in the agglomeration and socio-economic relations of the central city with the environment, the development of transport infrastructure, cultural-household and recreational relations and other factors as the basis for dividing the boundaries of urban agglomerations. .

For example, in many studies, the endpoints of pendulum migration also determine the development of the central suburban zone. It is the isochronous method based on oscillatory migration that uses lines (rings) connecting points with the same time of attendance in relation to medium and large cities located near the boundaries of agglomeration. This method is based on the separation of rings around the agglomeration core. The first is half-hourly isochrons in relation to the main city boundaries of the agglomeration, and the second is one-hour isochronous. the third is one and a half hour isochron; the fourth one is a half-hour isochron for medium-sized and large cities located near the borders of agglomeration (or a two-hour isochron for the main city).

To determine the development of urban agglomerations, the formula of the coefficient of development of agglomerations developed by the Institute of Geography of the Academy of Sciences of the former USSR is used; Using this formula, it is possible to determine the potential of developing [8] and already formed agglomerations:

$$R_{koef} = P \times (M \times m + N \times n),$$

Where P is the number of existing populations in the agglomeration; M and N are the number of cities and towns, respectively; m and N are the proportion of urban populations in the agglomeration. In this case, if the agglomeration development coefficient is equal to or less than 2.5, then the urban agglomeration will be the least developed.

The agglomeration coefficient is designed to determine the maturity of urban agglomerations developed and formed by the Research Institute of urban planning. The agglomeration coefficient (AK) is calculated through the ratio of the density of the network of urban settlements to the average shortest distance between them.

$$A_k = N/SL,$$

where N is the number of urban settlements in the agglomeration; S is the area of the agglomeration; L is the shortest distance between the agglomeration and urban settlements. This coefficient should be equal to at least 0.1.

Agglomeration index (Ia) - ratio of suburban population to population of entire urban agglomeration:

$$A_i = P/P_a$$

In this, P is the number of inhabitants of satellite cities; P<sub>a</sub> is the number of existing inhabitants in the agglomeration.

It should be noted that the socio-economic relations of the agglomeration core with the suburbs are carried out in most cases by comparing real estate and land prices, the labor market, road density, pendulum migration (labor, education) and the volume of turnover, credit and financial instruments, information communications, the quality of life of the central city with other cities.

It is known that the developed transport infrastructure is important in the delimitation of urban agglomerations. Consequently, the diversification of transport types (suburban, intercity bus, rail, water transport, automobile, as well as the volume of passenger or cargo transportation by all types of transport are of great importance in this place.

Attention will be paid to the use of public-use infrastructure facilities, including roads, bridges, water and energy supply facilities.

#### Conclusion

In conclusion, in the delimitation of agglomeration, cultural-domestic, recreational relations agglomeration the population is of great benefit. For example, this includes the expansion of the single labor

market, the increase in specialization, the increase in the innovative potential of the territory, and the expansion of the product market. Also, due to increasing the mobility of the population or the availability of various services, improving the quality of life of the population, there is an increase in the growth of small and medium-sized cities, the possibility of implementing large infrastructure projects (transport, utilities, etc.), the development of infrastructure (Social, Economic), the possibility of attracting more investments, saving transportation costs, Judging by the analyzes, the presence of a single scheme for the development of all settlements within the urban agglomeration provides the basis for financing, accelerating the socio-economic development of territories. With urban agglomeration, the balanced development of the region results in an improvement in the quality of life of the population. The development of agglomerations presents great problems related to diversification of transport types, the permeability of roads; this in turn reduces the speed of movement in the agglomerasiyagaru settlement Abbey. At the same time, it is worth noting that to solve transport problems, large costs are required for the development of cars, complex networks of Railways and passenger transport.

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