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## URBANIZATION: DEFINITION, COMPONENTS, AND CLASSIFICATION IN CONTEXT OF LAND AND ECONOMICS SCIENCES

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**V. NAZARENKO**, graduate student, National University  
of Life and Environmental Sciences of Ukraine  
[nazarenko.vladymyr@gmail.com](mailto:nazarenko.vladymyr@gmail.com)

Scientific advisor, Doctor of Economy, Professor, Martyn A.  
National University of Life and Environmental Sciences of Ukraine  
[martyn@nubip.edu.ua](mailto:martyn@nubip.edu.ua)

**Abstract.** *This paper approaches urbanization from the broader context of land and economic sciences, with a focus on the theoretical framework and practical use of data classification. International organizations, official government bodies, and private research institutions have different views on urbanization, rely on various methods for statics research and data classification. In this paper we overviewed the term from several angles, such as land use and settlements area, population dynamics and regional economics, agriculture and resources use, followed by sustainable development in the context of urban development plans and policies. The proposed conceptual model of urbanization inland and economics science context determined urbanization as both state and ongoing process. As a result of research work, urbanization process and state key data and research metrics were presented and categorized by fields of application and research subfield category. The important section of the urbanization definition is a robust multistage research framework. We believe that it can help other researchers, as well as the author, look like urban growth, history, and development prospects with less bias and with a focus on long-term vision, multidisciplinary approach.*

**Keywords:** *urbanization, urban economics, land science, land use, legislation.*

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### **Topicality.**

Any prominent research relies on terminology, methodology, and data. Urbanization research is being one of such fields that lacks in general term definition, process components, and key data metrics. In this article we aim to answer the following questions, what is the correct definition of the city, how are modern cities different from old ones,

how can we differentiate between urban, suburban, and rural areas. Many factors make this distinction unclear, among them are social and political, economic, and governmental regulatory acts. It is vital to classify the main factors that made urbanization possible in the past and that catalyze urbanization expansion. To classify cities and the urbanization process, we should understand why settlements were built on specific

locations, what are the modern determinants of new settlements' expansion and construction. One of the hypotheses on why the urbanization process is going is population shift towards large urban centers, metropolises. In past decades, this migration rate has increased and, in the future, this shift will be tremendous - in some countries, this is already happening and inevitable, while others will show a huge leap in the next ten to fifteen years. However, there is no single model that describes what is urbanisation, contributing factors, and why some cities are being built and developed more than others - what are the major determining factors. Our initial assumption is that transports, communications, and ecological ecosystems are key components of urban development. In this paper, we propose a framework model for urbanization definition in the context of land and economic sciences.

### ***Analysis of recent research and publications.***

An urban area is defined by one or more of the following data: administrative criteria or political boundaries (e.g., area within the jurisdiction of a municipality or town committee), a threshold population size (where the minimum for an urban settlement is typically in the region of 2,000 people, although this varies globally between 200 and 50,000), population density, economic function (e.g., where a significant majority of the population is not primarily engaged in agriculture, or where there is surplus employment) or the presence of urban characteristics (e.g., paved streets, electric lighting, sewerage) [1, 2]. In 2010, 3.5 billion people lived in areas classified as urban [1]. Urbanization is the quality or state of being urbanized or the pro-

cess of becoming urbanized [1]. It can be classified as a process where people move from the country (rural areas) to densely populated, large settlements. The most urbanized areas are the United States, European countries, India, Brazil, and East Asian countries, such as China, according to UNN 2014 report [1]. There is a common misconception that most of the urban population live in Megacity central district, while in a majority of heavily urbanized countries, a large part of the population resides in smaller suburban towns and settlements [1]. There is no standard definition that denotes that is an urban area or an urban population, how it differs from suburban or neighbouring rural settlements [2]. Most, if not all, countries have their definition of city and urban settlements. As a result, statistical data often can be misleading or misinterpreted due to this. Based on the above-mentioned facts, it is difficult to have a real view of the percentage of urbanized population and settlements, without first establishing urbanization terminology and providing its definition.

***The aim of the study.*** There is no single definition of urbanization as a state or as a process. This research aims to determine the main components of urbanization, as well as provide the classification of economical and land use aspects of this process, state. We will be reviewing how urbanization is defined by international organizations such as FAO, UNN, and UNESCO, as well as overview what is urban definition in selected heavily urbanized countries.

### ***Materials and methods of research.***

The problem is how we classify urban center, what properties should it have and what areas to include/exclude. Urbaniza-

tion in a broader context can be defined by – official city limits, industrial and agricultural business placement and size, population size, and density. International organizations provide broader systems urban classifications with a focus on economic, social, and land use aspects of it. City development is based on spatial development axis, transport infrastructure and road cover, natural and food resources centers, and local community clusters. Some cities can be classified not national but international cities, for instance, a large metropolis in European Union, such as Paris or Berlin,

London in the United Kingdom, or Hong Kong. Special attention should be given to how we classify future cities and newly developed urban clusters, for instance in Africa or Latin America, as they have their own rules and special context of development. In Figures 1 and 2 the author provides urbanization classification with a focus on land use (Figure 1) and economic aspects (Figure 2).

The core data that has been gathered, processed, and used in this research is provided in Table 1. Table 1 presents structured information on urbanization

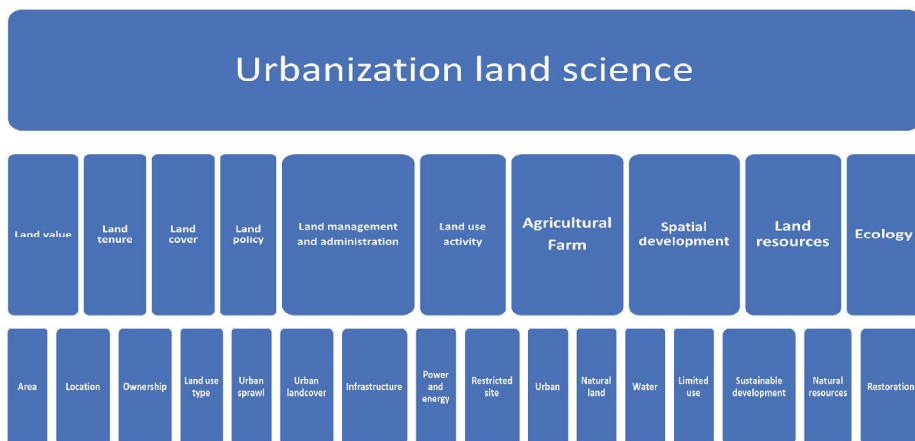


Fig.1 Urbanization research, land sciences context [1-15]



Fig.2 Urbanization research, economics sciences context [1-15]

Table 1. Urbanization terminology definition and components \*

Terminology	Sciences Subfields of research	Organization Country	Description Components
Urbanization	Economics and Social data	United Nations	Urban size and population dynamics Urban growth and city boundaries Ecological consequences
Sustainable Urbanization	Ecology Sustainability Environment	United Nations	Economic, financial, and social aspects of cities sustainable development
Sustainable cities	Ecology Sustainability Architecture	UNESCO	Smart city Architectural heritage and historical sites Sustainable development plan
Impact of Urbanization	Agriculture Policy and governance Green cities	FAO	Rural economic development planning and policy Food and social effects of urbanization Green city planning and policy
Cities and urbanization	Governance Legislation Climate and natural resources management	World Economic Forum	Social and political aspects of city management Urban governance and economic planning Financial, investments and ecology economic planning and policy
Urban development	Economic growth Sustainability Spatial development	World Bank	Urban population and dynamics Sustainable city development plan Urban economics, growth, and city planning
Urban Agriculture	Agriculture Land use Policy and governance	American Planning Association, US	Green space Economic development of suburban and rural areas Local policies and governance Urban farming and food supply planning
Urbanization	Sociology Economic development	Britannica, US	Settlement classification Urban economics definition Urban land area size
Urbanization	Term definition	Merriam-Webster, US	Urbanization history Urbanization state definition
Urban land area	Land use and development Geography	Our World in Data, UK	Urban land area size and dynamics Population density and statistics Urban to rural population mapping
Urban definition	Population and social studies Term definition	Population Reference Bureau, US	Regional and international settlement classification Population statistics and prospects
Urbanization	Economic and Social development	Policy Research Institute, Ministry of Finance, Japan	Population growth and dynamics Urban centralization and decentralization GDP and employment statistics, planning
Urban living	Population and social studies Governance	Deutschland.de, Germany	Urban to rural population statistics Living conditions and economic equality

The Urban Informal Economy	Sociology Economic development Urban Planning	Urbanet, Germany	Urban Planning Land Allocation Small business economic plans Waste management Future planning and policies
Big city	Economics and Social data Political studies	The National Institute for Strategic Studies, Ukraine	Political, economic, and social aspects of city, definition focused. Infrastructure development and city long term planning
General scheme of planning of the territory of Ukraine	Spatial development Urban Planning Real estate economics	City 2030, Ukraine	Housing stock dynamics and planning Mortgage policies and regulations Real estate financial statistics
Agglomeration processes	Term definition Policy and governance	Decentralization governmental website, Ukraine	Capital agglomeration definition and legal regulations National centralization and decentralization city-related policies Settlement administrative division

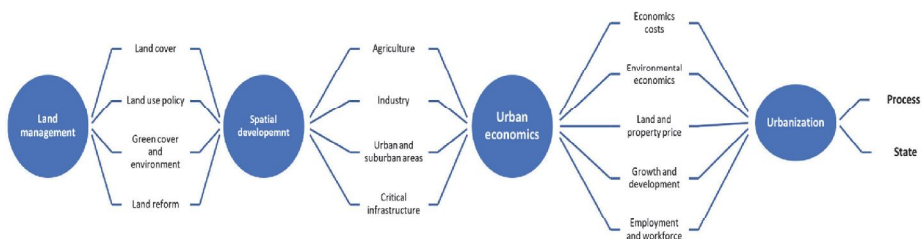
\* prepared based on personal research data and data from various sources[1-15]

terminology and its components, ordered by organization and country, key components of this definition as well as research subfields that this definition is based on, revolves around.

### ***Research results and their discussion.***

There is a persistent number of cases with a certain number of large cities when their actual area, size is larger than officially noted. In this context, it is important to understand how cities' areas are defined now in terms of official classification, terminology, and labels. In this paper we analyzed factors that present the modern definition of urban center - city and based on it

we constructed key metrics data to help us in the task of urban area classification. One of the major determinants of modern city definition is urban population, population density, urban area boundaries. It should be noted that there are many ways to label a specific settlement as an urban area and the general concept of city limits is quite vaguely outlined. If we look at the United States definition, then urban area and city are similar terms, while metropolitan area is a different type of settlement. Generally speaking, the settlement is classified as flowing areas - city, suburban area, town, and rural area. While each individual is type is divided based on settlement population size and proximity to large, densely populated areas. Meanwhile, there is a



**Fig.3 Urbanization components in the context of land and economics sciences**

common denominator in the international official definition of the cities. If we analyze them, we can divide settlements into two broader categories - urban and rural

areas. What differs is the definition and specifics map outline of city boundaries. The next step would be to research how cities were formed and study their history

**Table 2. Urbanization key data and metrics\***

Areas of research	Components	Data (type)	Application subareas
Economic development	Municipal budget and planning Investment and taxation Industry and agriculture Real estate and land market	Taxation rate Property tax GDP Inflation rate Investments by sector Interest rate Property price Property supply Market and pricing	Urban and suburban development planning Economic policy and municipal/governmental regulations Economic policies of industry and agriculture
Population and sociology	Public health Employment Demographics Living and housing	Urban, rural, and suburban statistics Growth dynamics/change Households' data Locality distribution Property and financial statistics	Equality and living conditions improvement policy Financial regulations
Geography	Landscape topology Natural resources	Land cover Topography Areas and zoning	Settlement land area statistics, planning, and spatial development planning Natural resources use planning and regulations policies
Land use and spatial planning	Urban Suburban Rural Infrastructure and power grid Industry and agriculture	Location Area size Dimensions Use case/type Total area/length Resource mapping Zoning and ownership	Settlement long term building plan Smart city management Settlement zoning and land use policies, planning
Ecology	Green cover Water resources Waste and landfills Technology and power Emissions and hazards Healthy ecosystem Effective natural resources management Water management	Green energy costs Saving and adaptation costs Restoration costs Land-use change costs Environment taxation	Green cities plan Power and ecology financial regulations Sustainable settlement development program and policy
Policy and governance	Terminology Land use and property rights Municipal and local governance	Planning policy State definition Use rules and regulation Taxation, interest rate, and market regulation	Cities centralization and decentralization regulations and policies Urban, rural and suburban policy

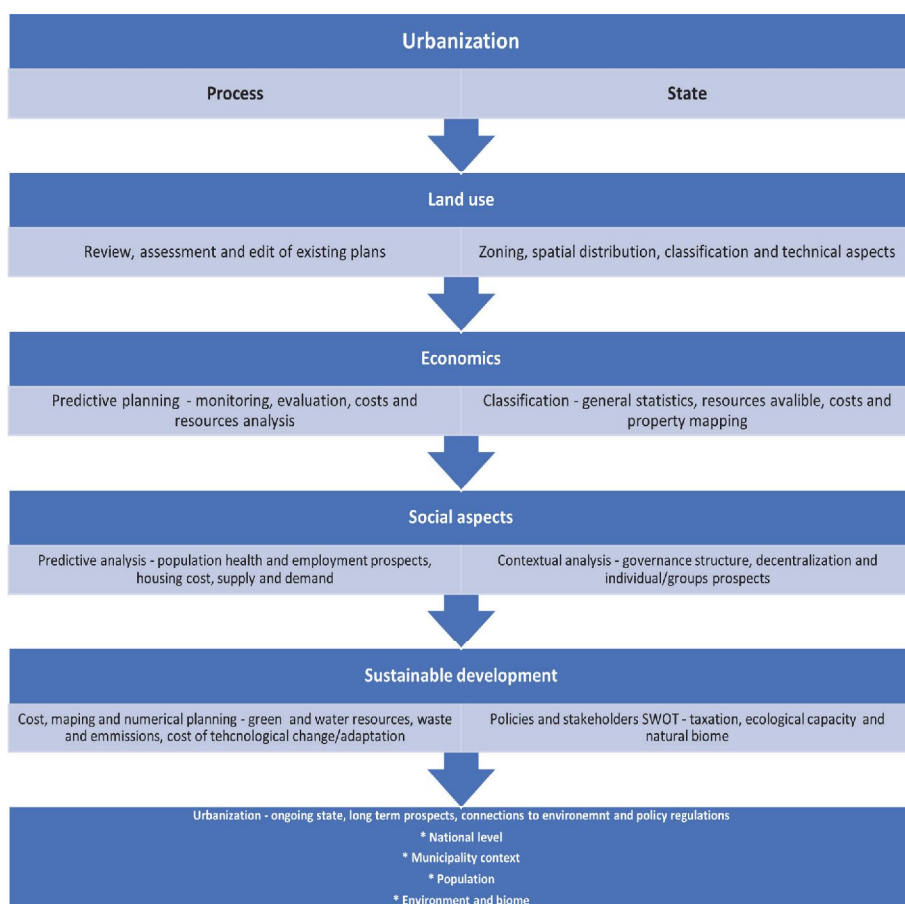
\* prepared based on personal research data

from several angles, including different cases of when two or more cities were joined together or when several industrial districts were connected to form a production cluster that later grew into a municipality. However, such research work goes beyond the scope of present research and can potentially be studied in the future.

To help us identify and provide a clear definition of urbanization we focused on preparing a conceptual model in the research context of land and economic sciences. Figure 3 presents such a concept model, which denotes three subfields of urbanization – land management, spatial development, and urban economics. The

resulting output of the presented model is urbanization generalized definition as both process and state.

A list of major data types and field components of urbanization is presented in Table 2. The research results are classified based on six general research categories, that are derived from Figures 1, 2 and 3, and Table 1 data. The important section of Table 2 is the Application column. It represents subareas of urbanization research and practical application areas. The majority of the data in Table 2 is economic, financial costs, or regulations centered. This data can be used in further research of urban pro-



**Fig.4 Urbanization definition framework**



cesses-related topics. It should be noted that some researchers and official publications exclude or do not pay enough attention to ecological and sustainable development subcomponents of urbanization. We addressed this issue and added the ecology category to the table as well as sustainability-related data in several adjacent categories' fields.

In this scientific work, we determined a framework that defines urbanization as both state and process. This four stages framework is divided into two sections and is presented in Figure 4.

### *Conclusions and prospects.*

In this paper, we defined urbanization as both process and a state that exists in the intersection of many disciplines and fields of research, as well as international policies and acts. Urbanization in a broader context touches land use, economics, social aspects, affecting sustainable development plans and has a deep ecological impact, footprint. This process should not be looked at only on the municipal level but on national and international levels. We hope that the classification, definition, and framework that has been provided in this article will be useful for economics and land management scientist worldwide, help policymakers and intentional nonprofit organizations leaders. The author plans to continue the work on the urbanization framework from the broader context of city planning, land use mapping, and city management.

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**В. А. Назаренко**

**УРБАНІЗАЦІЯ: ВИЗНАЧЕННЯ, КОМПОНЕНТИ ТА КЛАСИФІКАЦІЯ У КОНТЕКСТІ НАУК ПРО ЗЕМЛЮ ТА ЕКОНОМІКУ**

[https://doi.org/](https://doi.org/10.31548/zemleustriy2021.01.10)

10.31548/zemleustriy2021.01.10

**Анотація.** Будь-яке ґрунтове наукове дослідження спирається на термінологію, методологію та дані. Дослідження урбанізації є однією з таких галузей, де на сьогодні не вистачає визначення основних термінів, компонентів цього процесу та ключових показників даних для дослідження та вивчення. Ця робота спрямована на вивчення засобів та методів дослідження процесу урбанізації у широкому контексті наук про Землю та економічних наук, з акцентом на теоретичні засади та класифікацію даних для їх практичного використання. Міжнародні організації, офіційні державні органи та науково-дослідні установи різних форм власності мають різний погляд на процес урбанізації, покладаються на різні методи дослідження, статистики та класифікації даних. У цій роботі ми провели огляд термінології, що стосується процесу урбанізації з кількох різних ракурсів, таких як: землекористування та території населених пунктів, динаміка чисельності населення, регіональна економіка, сільське господарство та використання ресурсів з подальшим сталим розвитком у контексті планування міського розвитку та удосконалення законодавства. Запропонована нами модель урбанізації в контексті наук про Землю та економічних наук визначила урбанізацію як довготривалий процес державного та місцевого рівнів.

За результатами проведеної роботи представлені та класифіковані ключові дані та показники досліджень за прикладною та дослідницькою категоріями. Важливим фактором для вірного і точного формулювання визначення процесу урбанізації є надійна багатовекторна теоретична модель, отримана за результатами досліджень. Ми вважаємо, що це може допомогти іншим науковцям у їх дослідженнях, а також автору даної роботи для розгляду та вивчення процесу розвитку міст, історії їх формування, з акцентом на довгострокове економічне і соціальне планування, спираючись на мультидисциплінарний підхід.

**Ключові слова.** Урбанізація, економіка урбанізації, науки про Землю, землекористування, законодавство.

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**В. А. Назаренко**

**УРБАНИЗАЦИЯ: ОПРЕДЕЛЕНИЕ, КОМПОНЕНТЫ И КЛАССИФИКАЦИЯ В КОНТЕКСТЕ ЭКОНОМИЧЕСКИХ НАУК И НАУК О ЗЕМЛЕ**

[https://doi.org/](https://doi.org/10.31548/zemleustriy2021.01.10)

10.31548/zemleustriy2021.01.10

**Аннотация.** Любые современные научные исследования опираются на терминологию, методологию и данные. Одной из таких областей является исследование процесса урбанизации, в которой в настоящее время отсутствует определение основных терминов, компонентов этого процесса и ключевых показателей данных для исследований и изучения. Эта работа направлена на изучение средств и методов исследования процесса урбанизации в широком контексте земельных и экономических наук с особым акцентом на теоретических принципам и классификации данных для их практического использования. Международные организации, официальные правительственные учреждения и научно-исследовательские институты различных форм собственности по-разному рассматривают процесс урбанизации, опираясь на

различные методы исследований, статистики и классификации данных. В настоящей исследовательской работе мы провели обзор терминологии, касающейся процесса урбанизации, с нескольких различных точек зрения, таких, как: землепользование и территории городов, динамика численности населения, региональная экономика, сельское хозяйство и использование ресурсов с дальнейшим устойчивым развитием в контексте планирования городского развития и совершенствования законодательства в данной области. Предлагаемая модель урбанизации в контексте экономических наук и наук о Земле позволила определить урбанизацию как долгосрочный процесс, как на государственном, так и на местном уровнях. По результатам работы представ-

лены и классифицированы ключевые данные и показатели исследований по прикладным и научным категориям. Важным фактором для правильной и точной формулировки определения процесса урбанизации является надежная многовекторная теоретическая модель, полученная по результатам исследований. Мы считаем, что это может помочь другим ученым в их исследованиях, а также автору этой работы рассмотреть и изучить процесс развития городов, историю их формирования с акцентом на долгосрочное экономическое и социальное планирование, основанное на междисциплинарный подход.

**Ключевые слова.** Урбанизация, экономика урбанизации, науки о Земле, землепользование, законодательство.