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MEASURING THE URBANIZATION IN UKRAINIAN REGIONS: CURRENT APPROACHES

Proportion of urban population is a traditional indicator of urbanization degree in many countries and regions. However, the process of urbanization in each country has its own specifics. In many post-Soviet countries a share of urban population does not reflect the penetration rate of «urban» conditions, of modern culture and comfort, but reflects concentration of industrial production. The real «urban» living conditions (and also «urban» problems) usually appear in big cities, but in Ukrainian regions there are many much smaller urban settlements, in which the population living can be classified as «semi-rural».

Therefore, to evaluate the real penetration of «urban» living conditions in regions more complicated indicators should be used – integral urbanization indices, which include not only the share of urban population, but also the density of urban population and settlements and so on. In the article the approaches for evaluating the urbanization degree of regions of Ukraine are discussed and their approbation based on the 2014 statistics data was done. Calculations show that by such estimates the traditional regional pattern of urbanization degree in regions is changing, although the main trends look very similar. Donetsk region by different approaches remains hyper-urbanized, but variation in urbanization degree between regions by complex calculation is not so high. Regions with small number of large cities and low urban population and settlement density relates to low-ranked in urbanization degree.

Key words: urbanization, urbanizing levels, urban situation, urban population, regions of Ukraine.

Ірина Гукалова, Наталія Омельченко. ОЦІНКА УРБАНІЗАЦІЇ В РЕГІОНАХ УКРАЇНИ: СУЧАСНІ ПІДХОДИ

У статті розглядаються окремі підходи до кількісної оцінки урбанізованості регіонів України на основі одного традиційного (частка міського населення) і сукупності структурно-поселенських показників. Це дозволило більш точно оцінити специфіку урбаністичної ситуації в Україні з урахуванням ключових характеристик міського розселення і виявити її відмінності на мезорівні. При введенні в розрахунок декількох показників відмінності в рівні урбанізованості є менш контрастними, але загальна картина кардинально не змінюється: найбільші відмінності зберігаються між південно-східними («лідер» – Донецька область) і західними областями, хоча рівень «реальної» урбанізованості помітно знижується для ряду областей.

Ключові слова: урбанізація, урбанізованість, урбаністична ситуація, міське населення, регіони України.

Ірина Гукалова, Наталія Омельченко. ОЦЕНКА УРБАНИЗАЦИИ В РЕГИОНАХ УКРАИНЫ: СОВРЕМЕННЫЕ ПОДХОДЫ

В статье рассматриваются некоторые подходы к количественной оценке урбанизированности регионов Украины на основе одного традиционного (удельный вес городского населения) и совокупности структурно-поселенческих показателей. Это позволило более точно оценить специфику урбанистической ситуации в Украине с учетом ключевых характеристик городского расселения и выявить ее различия на мезоуровне. При введении в расчет нескольких показателей различия в уровне урбанизированности менее контрастны, но общая картина кардинально не меняется: наибольшие различия сохраняются между юго-восточными («лидер» – Донецкая область) и западными областями, хотя уровень «реальной урбанизированности» заметно снижается для ряда областей.

Ключевые слова: урбанизация, урбанизированность, урбанистическая ситуация, городское население, регионы Украины.

Problem-statement. Urbanization is one of the major and defining trends of global development. Urban conditions and lifestyle attract people with more opportunities of self-realization, comparatively high level of incomes, individualized form of living, modernized environment. According to E. N. Pertsyk, urbanization (in the age of the scientific-technical revolution) is a multifaceted global social and economic process connected to the intensification of development, concentration of productive forces and forms of social interaction and *the widespread of urban lifestyle on the whole settlement network* [6]. The latter in the given definition is very important as not rarely scientists consider only cities and urban localities in their analysis of urbanization processes. At the same time the widespread of “urban” conditions and lifestyle is not limited with city borders.

Urbanization process steps widely and deeply and continues in the area of urban agglomerations, penetrates to rural areas. It is an omnipresent and constant process that is mainly characterized with high rates of growth of quantity and share of city population. The reached *level of urban development* is another matter and can be evaluated by means of a large list of indexes to cover as urban and rural population and relevantly – urban and rural areas. “Urban exploration” is probably considered to be the closest term to the level of urban development though it is much narrower.

Terms of urbanization and urban development correlate variously in different types of countries and high rates of urbanization do not always mean a high level of urban development. To characterize the latter it is not enough to handle only indexes of urban population share or its progress. Urbanization is a complex process which nevertheless has its own structural peculiarities and driving forces on each specific territory. That’s why an index

which characterizes urbanizing has to be complex. Such important characteristics as the level of development of large cities, the relation between urban settlements with different population size, the coverage of population by urban lifestyle, etc. can be aggregated into it. Thus, the issue of methodical substantiation of approaches for complex measurement of current “urban reality” at different spatial levels is still a topical question for geographical researches.

The purpose of the given article is a substantiation of approaches to the complex measurement of the urbanization levels in Ukraine’s regions taking into account different parameters of urban settlement and its testing to clarify a modern regional picture of urban development.

Analysis of recent researches and publications.

Representatives of many branches of knowledge make the evaluation of problems, trends and levels of urbanization. But it is difficult to call to mind one more trend with so many thoughts and approaches. During long time while doing urbanization analysis Ukrainian geographers have followed the idea of “settlement and manufacturing” approach which relied at first on the analysis of territorial organization of urban localities emphasizing a manufacturing and economic component in its formation and what is moreover important in its development and on the other hand – on the evaluation of urban population and settlement progress according to which Soviet urbanization was really impressive. The methodology of Soviet times hardly used other countries experience in urbanization studies especially of developed capitalistic ones, and this is a very embarrassing fact both from the point of view of urban planning and from the point of view of geourbanistic theories as such. Actually for long periods of time some social, cultural, intelligent, civilized backgrounds of urban development, peculiarities of some stages and the specifics of their process in different countries have been ignored. That’s why the analysis of qualitative sides of urbanization is still important nowadays. This analysis must be multifaceted: it is necessary to study not only economic base of urbanization (manufacturing, resources, labour force, and infrastructure), not only a picture of exactly urban settlement but different parameters of modern community life as of city citizens as of rural ones. It is necessary to start with clarifying of measurement of urbanizing level of Ukraine’s regions.

A number of scientists – representatives of native and foreign schools – devote their numerous pure researches to urbanization process and specific cities development. Social and economic aspects of urban development in Soviet and post-soviet period emphasized and are still emphasizing in publications of A.I. Alekseev, A.S. Akhiezer, A.G. Holtsov, O.V. Gladkyi, I.V. Gukalova, V.O. Dzhaman, O.L. Dronova, A.I. Dotsenko, N.V. Zubarevich, S.I. Ishchuk, L.M. Koretskyi, G.M. Lappo, I.M. Maiergoiz, T.G. Nefedova, V.I. Nudelman, K.A. Niemets, L.M. Niemets, E.N. Pertsyk, Y.I. Pitiurenko, Y.L. Pyvovarov, G.P. Pidgrushnyi, S.A. Poklyatskyi, V.V. Pokshyshevskyi, N.O. Sluka, A.V. Stepanenko, O.G. Topchiev, A.I. Treivysh, V.V. Yavorska and others.

Attempts to make complex researches with analysis of specifics and depth of urbanization, its social and economic consequences for specific regions of Ukraine are still very rare. But there is a need in such researches as, for instance, urbanization in Western Europe, and urbanization in the former Soviet Union (the part of which Ukraine was in the most intensive period of city and urban population growth) are different both in the aspect of its nature and driving forces of urban development and in the aspect of its results. The consequences of rapid creation of new industrial communities in eastern and south-eastern parts of Ukraine did not take into consideration in Soviet period and in transition period these consequences have become obvious as “satellite industrial cities” became hostages of “imposition” of another way and conditions of life on the territories that traditionally were considered to be agricultural. Natural priority of historically formed cities with its own traditions of local communities and government, with settled structure of localities, urban culture and lifestyle, relevant developed spheres of population’s activity was essentially “violated” by creating of large scale of industrial communities, by controlling policy of large cities development and, at last, by representing industrialization results as results of urbanization. Correspondently there were “gaps” on the scientific field – urbanization is impossibly at a low level of realization as a social and geographical process of urban population’s conditions, way and quality of life transformation and it is represented only by urban population share what is very formal and single-minded point of view. But a number of parameters of urban population and settlement development are pointed indirectly to some qualitative sides of urbanization and this article deals with some of them.

The main material. Urbanization has its scale, trends and peculiarities according to specific social and economic conditions, economic growth situation [4]. At first glance modern Ukraine seems to be entirely urban country: at the beginning of 2015 69.12% of its population lives in cities. In terms of large cities (with population over 100 thousand people) the country takes one of the top places in the world: there are 45 such cities. But in different countries of the world there is a quantitative limitation of population density according to which it is possible to define a city: in Denmark a city is a settlement with more than 200 people, in Australia – with more than 1000 inhabitants, in Japan – with more than 50 thousand people. Considering mentioned above it can be stated different understanding of urbanization level calculating average population density of cities: if there were a single “global” limitation of population density the evaluation of urbanization level of countries would have been another one.

A classical rate of official urbanization level (according to urban population) is very differentiated by regions of Ukraine and fluctuates from 37.1% in Zakarpattia region up to 90.7% in Donetsk region. During many years trends have been the same: at the beginning of 2015 49.6% (that is almost a half) out of 29,67 million of urban inhabitants (without the Crimea) lives in five regions: Kyiv (including the capital), Donetsk, Dnepropetrovsk, Kharkiv and Lugansk regions, the share of urban population in each of which exceeds 80%. High

rates of urban inhabitants share that are average throughout the country – in Zaporizhzhia, Mykolaiv, Kherson, Odessa, Sumy, Kirovohrad, Lviv and Chernihiv regions, relatively low rates – in Vinnytsia, Volyn, Zhytomyr, Poltava, Khmelnytskyi, Cherkasy regions. The lowest ones – in Zakarpattia, Ivano-Frankivsk, Rivne, Ternopil, Chernivtsi regions [7].

But the share of urban population itself does not reflect the level of penetration of “urban” conditions, and moreover – not the level of culture and collective intelligence of the society but the level of concentration of industrial manufacturing. To neutralize the activity of industrial concentration G. A. Golts made up a term of *real urbanization*, which he recommended to calculate as a geometric middling of the following rates [5]:

- 1) share of urban population in the region’s population;
- 2) share of urban localities in total number of localities;
- 3) share of cities with the population more than 100 thousand people;
- 4) share of cities in total number of urban localities;
- 5) share of population of regional center in region’s population;
- 6) share of populated habitable territory in total region area.

Integration of additional rates (to the share of urban population) is explained by integral understanding of urbanization as a process that covers both urban and rural areas and is characterized by specific correlation between urban localities of different population density, more or less meaning of the regional center in the functioning of the population of the regions, better forming of urban conditions and way of life exactly in large cities in comparison with small towns and other urban-type settlements. In Ukrainian reality genuine features of the city (diversified sphere of work application, developed social and transport infrastructure, mainly urban lifestyle, centralized residential utility infrastructure, etc.) appear approximately in city level of 100 thousand inhabitants.

Taking as a basis Golts’s method and excluding the share of habitable lands and the share of the population of regional center from the list of the initial index we calculated so called “simplified” index of urban development (“real urbanization”) of Ukrainian regions using the following formula:

$$I_{realurb} = \sqrt[4]{x_1 * x_2 * x_3 * x_4} \quad (1)$$

$$Coef_{UrbSettDensity} = \sqrt[3]{Coef_{urbpopulden} * Coef_{urbsettden} * Coef_{citiesden} \quad (3)$$

The more urban localities on the territory (the denser their location is), the shorter is the distance between them that is why the population of around areas including villages has a choice where to get in case of the necessity of “urban” services. It is obvious that not all urban-type settlements have a full range of service in

where x_1 – share of urban population in the region’s population;

x_2 – share of urban localities in total amount of localities;

x_3 – share of cities with the population of more than 100 thousand people in urban population;

x_4 – share of cities in total amount of urban localities (table 1).

According to such evaluation the pattern of urbanization of Ukraine’s regions has become another – especially notable there is a difference for L’viv, Sumy, Kherson regions, the position of which in groups with different levels has changed. But general trends (highly urbanized East and weakly urbanized West) have left the same (Fig. 1). Thus, the major part of urban population in many regions of Ukraine is concentrated in urban-type settlements, small and middle towns (on average all over the Ukraine 43% of urban population live in these settlements), where the impulses of real urban lifestyle and conditions, comfort, modernization and innovations are smaller comparing to large cities.

Those regions where the coverage with “big city” way of life of population is higher, automatically “rise” in the evaluation of their urbanization not formally but objectively, first of all – in the aspect of the variety of offers and needs of the population and in the aspect of abilities to satisfy them as well. Those territories where population is concentrated mainly in small urban localities are characterized with semi-rural way of life and living of the population in post-soviet period.

It is necessary to underline that the variation of extreme values of calculated indexes is not so significant as according to the share of urban population. It means that regions “move closer” according to urbanization level calculated in such a way. Donetsk region, traditionally first by the share of urban population, stays among “leaders”, however it is followed not by Luhansk but Kharkiv region, and then by Luhansk and Sumy regions. The low urbanized regions are: Chernivtsi, Rivne, Cherkasy, Ternopil, Ivano-Frankivsk and, at last, Zakarpattia regions (Fig. 2).

Deeping the evaluation further it is possible to advance the given index if urbanizing by means of including urban settlement parameters in a specific region to the calculation.

$$I_{urbbysettle} = Coef_{UrbSettDensity} * I_{realurb} \quad (2)$$

In its turn a rate of urban population density settlement is geometric middling of indexes of urban population density, urban localities density and cities density appropriately standardized as to an average value of each of them according to the regions:

social sphere, even not all of them have hospitals, and cities are another matter. As a rule, there are a full range of services for population. Concentration of urban population and better availability of “urban” services through higher rate of density are a feature of real urbanization in the aspect of population needs satisfaction.

Table 1

Urbanization levels in regions of Ukraine according to different estimations, 2014

Region (Oblast')	Proportion urban (per cent)	$I_{realurb}$	Urban settlement density coefficient	$I_{urb\ by\ settlem}$
The Autonomous Republic of Crimea	62,70	28,31	0,82	23,21
Vinnys'tka	50,59	23,63	0,55	12,99
Volyns'tka	52,30	21,90	0,62	13,65
Dnipropetrovs'tka	83,62	30,80	1,84	56,61
Donets'tka	90,65	38,12	2,92	111,18
Zhytomyrs'tka	58,73	22,70	0,78	17,62
Zakarpats'tka	37,10	21,58	0,49	10,58
Zaporiz'tka	77,14	29,81	1,09	32,56
Ivano-Frankivs'tka	43,59	21,43	0,61	13,06
Kyivs'tka	62,18	28,88	0,74	21,37
Kirovohrads'tka	62,73	27,76	0,99	27,36
Luhans'tka	86,85	33,98	1,89	64,22
L'vivs'tka	60,96	24,02	0,78	18,62
Mykolaivs'tka	68,10	25,68	1,02	26,21
Odes'tka	66,90	26,86	1,12	29,98
Poltavs'tka	61,82	26,09	0,79	20,61
Rivnens'tka	47,73	20,93	0,65	13,52
Sums'tka	68,40	33,24	0,94	31,36
Ternopils'tka	44,47	21,26	0,57	12,08
Kharkivs'tka	80,57	34,61	1,25	43,13
Khersons'tka	61,19	22,89	0,98	22,43
Khmelnys'tka	56,13	22,70	0,62	14,06
Cherkas'tka	56,73	21,11	0,70	14,85
Chernivets'tka	42,89	18,34	0,61	11,10
Chernihivs'tka	64,30	25,95	1,18	30,58

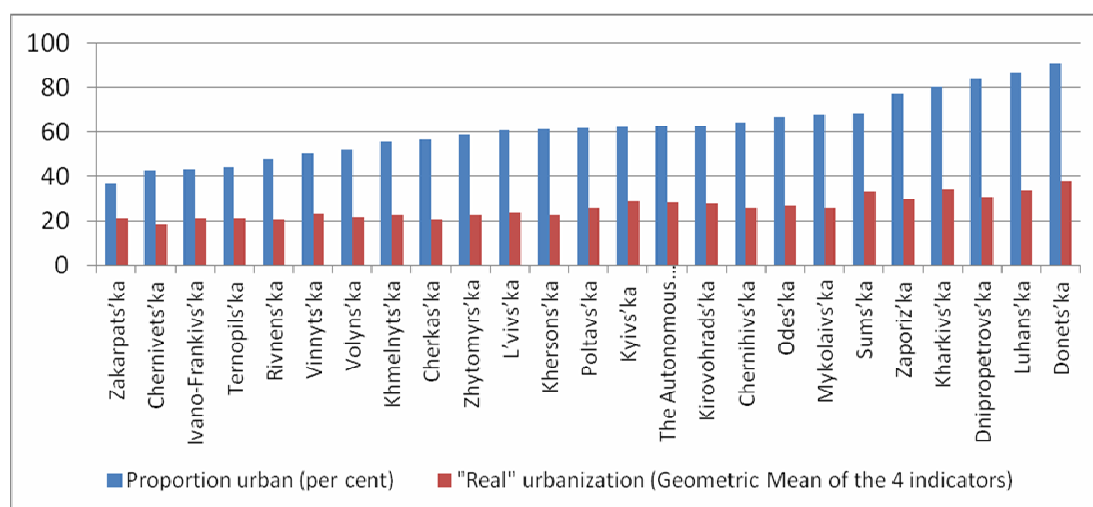


Fig. 1. Official and "real" urbanization in regions of Ukraine, 2014 (calculated according to [7, 8])

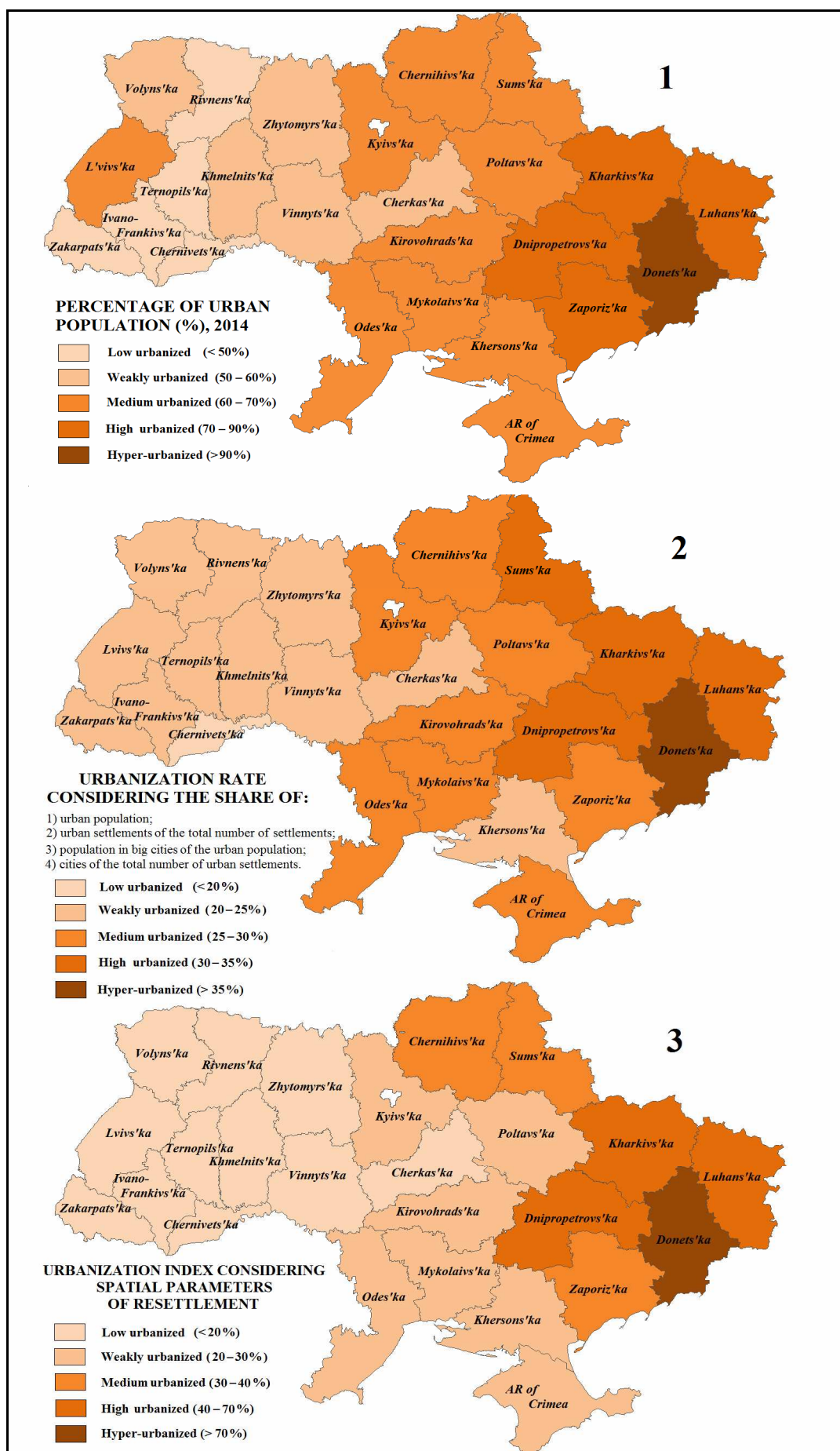


Fig. 2. Urbanization levels in regions of Ukraine according to different estimations, 2014

Urbanization index calculated considering corrections for urban settlement parameters showed analogous special trend as to west-east line, however at the same time there is a big difference in their levels which reach 10 times (from 10.58 for Zakarpattia region, city density and urban population density are very low up to 111.18 for Donetsk region where there are territories of transition of one urban locality into another one). Using of “corrections” taking into account the location of localities means a drop or, vice versa, a jump up according to the scale of urbanizing of those regions where peculiarities of urban population and localities location differ of average values over Ukraine in general. Kherson region can be taken as an example where the share of urban population is 62% what means that it can be a typical average urbanized region of Ukraine, however, using our calculated complex indexes it falls into low urbanized group of regions. As to Donetsk region “density” with of urban localities has a paradox: unlike classical cities that are formatted with society contacts, numerous mining urban localities appeared on the basis of resources and turned out to be dependent on society demand on them [1]. Resource concentration determined “overconcentration” of localities and hyper-urbanization that is formally confirmed using any means of evaluating brought more troubles than advantages for this region. But these issues require more specific detailed review.

Conclusions. Current ideas about urbanization originates from the point of view that actually civilization was found on the basis of development of key cities, their culture, forms and types of activity, institutions. That is why the process of urbanization and precisely its results has to be realized (and to be evaluated) as a process of formation and development of urban culture, a way and environment of life but not according to the

formal share of urban population. It allows making correct conclusions as to the level of real transformational conditions, nature of people’s living from rural to urban one. If an industrial period of cities development in Ukraine and over its borders was followed by high quantitative parameters of their intensive growth according to geographical, social-demographical, natural-resource, transport-infrastructure background – and in geography exactly these aspects of urban development was worked out and now it is of great importance to study “the reverse side of the coin” – geospatial widespread of urban comfort and modernization, urban variety of realization of abilities of people and “urban” troubles.

The first step on this way is a measurement of urban development level using complex of indexes that testify the availability of “structural and settlement” conditions of intensification of all socially meaningful processes in the society. Calculations made in this article for Ukrainian regions demonstrated that by including into the analysis some other indexes of urban reality the traditional picture of urbanization degree of the territory of Ukraine is changed. According to different measurements only Donetsk region stays hyper-urbanized though as a result of military conflicts and urban localities damage, breakdown of urban settlements structure in anti-terrorist operation zone, the measurement of a current level of urban development became very complicated.

Thus, simultaneous aggregation of several components (indexes) in a single index of urbanization allows considering the features of territories based on which it is possible to understand regularities and further trends of urbanization that influences and will influence strategic policy of sustainable development of Ukraine and its regions.

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