

# Realisation of ESG principles in million-plus cities under the sanctions regime: Is there an alternative?

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**Abstract.** The purpose of the article is to highlight the importance of maintaining a commitment to ESG (Environment, Social, Governance) principles in the economy of major cities even under the sanctions regime. The research methodology is based on the theories of sustainable and spatial development. The methods of comparative, statistical and structural analysis have been used. The study hypothesises that Russia, even in the current conditions, has due prerequisites for the development of its cities based on ESG principles of economic management. The analysis of the ecological situation made it possible to justify the need for non-alternative observance of ESG principles in urban agglomerations. It is shown that the adherence to these principles will be largely determined by the quality and efficiency of the developed municipal economic policy. It is proposed to devise a special section on municipal industrial policy within the framework of the regional industrial policy, with a view to systematising administrative and incentive measures for the realisation of the ESG agenda for million-plus cities. The research results can be useful in amending socio-economic development strategies for Russia's major and biggest cities.

**Key words:** Major cities; ESG principles; Agglomeration effect; Strategy; Regional industrial policy.

## 1 Introduction

The increased geopolitical tension, along with the emergence of various risks and the formation of the so-called new reality, has led to a change and, in some cases, to the transformation of the previously proclaimed development priorities. However, the priority of investing in the development of environmentally friendly, so-called "green" technologies, which has become an invariable trend in the development of the world economy, is maintained quite actively. Foreign policy shocks, global financial crises and the COVID-19 pandemic have for some time reduced the pace of funding projects involving green technology solutions. However, by the end of 2022, the world's most

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developed countries had mainstreamed the green agenda. Despite the increasingly complicated geopolitical situation worldwide, the commitment to global green agenda is not only continuing but even expanding. In fact, the number of states remaining committed to the green agenda is steadily increasing, reaching 213 in 2021 [1], while the furnished green loans increased from \$5 billion to \$120 billion between 2017 and 2020 [2].

Various methods and tools for regulating economic development processes aimed at achieving carbon neutrality are being developed in all countries [3, 4]. They contribute to attracting capital flows to green assets and projects [5]. The increased attention to the growing role of environmental, social and other aspects of corporate governance – the so-called ESG factors – is observed in relation to different economic processes at macro, meso- and micro levels. A great number of reviews systematise the conceptual framework of ESG factors, the impact of these factors on the investment attractiveness of regions, and cities, on the performance of companies and the minimisation of risks related to various assets [6, 7, 8].

It seems that the most difficult component for objective qualitative assessment of ESG factors is the social component. Among the aspects it includes, it is necessary to mention the protection of human rights, employees' equality and proper working conditions, the safety of manufactured products or services provided to the consumer, company staff training, etc. It was established that among the constituents of the social ESG component, the greatest contribution to reducing systemic risk is rendered by indicators characterising human resource training and quality of provided services [9]. Special attention, within the ESG-agenda aspect related to corporate governance, should be paid to the role, number and specific features of the board of directors' composition. It is also important, as viewed by the authors, to analyse the level and mechanisms of overseeing the ratio of salaries paid to banks' senior managers, specialists and other staff categories.

The environmental block of the ESG agenda is elaborated best of all, with increasingly more business entities involved in its realisation. Their activities, while complying with ESG principles, will contribute to the reduction of environmental pollution which conditions the health of the local population to a great extent. The OECD (Organisation for Economic Cooperation and Development) draws attention to the connection between air pollution and increased mortality as well as the reduced working capacity of the population [10]. This explains the significant increase in investment in green projects. However, there is no consensus among the experts as to which group of factors contributes most significantly to the integral effect. It is important, for the purpose of the present study, that some positive correlation between the successful development of companies and their investment in the ESG sphere has been recorded [10].

Globally, the ESG agenda is becoming increasingly relevant not only for manufacturing but also for financial activities. For instance, Japan's Financial Services Agency has developed a Code of Conduct for the ESG industry. In China, the Banking and Insurance Regulatory Commission has published a set of green finance guidelines which require the banking and insurance sector to play an active role in the transition to a low-carbon economy. Such activities of the financial sector are largely connected with environmental pollution and degradation, which pose numerous risks to various activities, including financial stability. A well-founded, as believed by the authors, grouping of such risks in this domain is expounded in the reference source [11]. Three types of risks are identified here: physical, transitional, which leads to difficult-to-predict changes in the value of assets when shifting to the low-carbon economy, and the risk of default. All of these risks are present in big cities' economies.

Major cities are the engines of a modern economy. Particular risks are associated with the increasing concentration of the population living in them, which actualises the realisation of ESG principles. Most of the added value is generated in such cities;

moreover, a tendency is observed: the larger the city, the higher labour and capital productivity. The most efficient and enterprising workers migrate specifically to the cities. Whereas the number of the world's largest cities at the beginning of the 20<sup>th</sup> century was below 20, that number had grown to 450 by the turn of the 21<sup>st</sup> century. UN experts estimate that cities will account for up to 90% of the global population growth in the foreseeable future. The proportion of urban dwellers in developed countries will reach 86% by the middle of the current century, with a figure of 67% in the developing countries [12]. By 2050, about 70% of the world's population will live in cities. A total of 80% of the global wealth will be generated mainly in cities, with an expected 60% of energy consumption in approximate figures [13, 14].

## **2 Materials and methods**

The research is based on the basic provisions of the theories considering sustainable and spatial development, long-term technical and economic development, and circular economic systems as well as the institutional theory. The specific methods of structural, comparative and statistical analyses were applied.

The information base of the research is represented by the materials of statistical collections on the socio-economic situation of Russian cities and regions, and the data of official websites of environmental monitoring organisations for the period 2019-2021. The authors' calculations relied on the reports of regional authorities on the state of the environment and were based on the major socio-economic indicators for Russian cities published by the official statistics bodies in the "Regions of Russia" collections. The authors used as well the information contained in State reports on the environmental situation in the Russian Federation and the regions included in the Ural Federal District, as well as the data of Mosecomonitoring (Moscow Economic Monitoring Organisation) on the ecological situation in Moscow.

## **3 Contradictions in the development of major cities**

According to numerous researchers' estimates, the major cities' development consequences are contradictory [15, 16, 17]. The high numbers and density of the population living in such cities and the scale of transport usage lead to increasing levels of environmental pollution and greenhouse gas emissions [18]. The development of million-plus cities is often accompanied not only by environmental but also socio-economic problems [15, 19]. The risks inherent in major cities' development are conditioned by the increased environmental congestion, the growing technogenic-risk factors, etc. The assessment of the impact of economic development on air pollution, undertaken by Druzhinin et al. [20], showed that this impact may have a multidirectional nature. In particular, the development of the existing industries and the creation of new production sites increases the negative impact on the environment. However, the structural shifts involving the emergence of new enterprises replacing old industries with obsolete technologies, as well as modernisation and transition to new technologies can reduce the negative impact on the environment.

Today, the development of industry, as the most resource-intensive sector of the economy, is no longer the main function of Russia's largest cities most of which show a significant degree of deindustrialisation. The authors support Kuznetsova's view stating that the above means not so much the loss of cities' industrial functions but the progressive transformation of their industries [19]. The most sophisticated types of production remain in the cities, while simpler industries shift to territories generating lower costs. That is,

losing their industrial importance in terms of the manufacture of simple products, the largest cities remain the centres of high-tech industries [21, 22].

The replacement of relatively simple activities by high-tech industries in major cities' economies is a significant process of economic restructuring which can prove to be quite painful for the urban population if no preventive measures are taken towards diversification of the economy, staff retraining, etc. The development of an innovative economy can play a special role in reducing social tension in major cities. Some of its numerous benefits belong to the social sphere. It is necessary to mention, in the first place, the higher income level, the possibility of getting a quality education and a variety of life benefits, the availability of a diversified labour market, and cultural diversity. Stated differently, big cities provide an opportunity to resolve social problems in the best way, which is an important component of the overall ESG agenda. Of course, the creation of due conditions for such development of big cities is a serious challenge for municipal authorities since it is necessary not only to support innovative industries but also to create proper conditions for the renovation of old production areas, etc.

The presence of a receptive market, due to transport and market infrastructure is an undisputed advantage of million-plus cities. All of this enhances the dynamism of comprehensive life development in major cities [23] and predetermines the emergence of "smart" cities [24].

## **4 Million-plus cities as a factor of the formation of agglomeration effect**

The development of major cities, with increasing concentration of population, is a truly important factor for the formation of an agglomeration effect. It is the agglomeration effect that is considered in the new economic geography as a factor determining spatial development [25, 26, 27]. The leading position of million-plus cities in economic development is confirmed by the research carried out not only on the theoretical basis of the new economic geography but also by the previous studies undertaken within the framework of classical theories of regional growth and placement.

This role is assigned to the agglomeration effect – firstly due to the created scaling effect making it possible to reduce the relative costs of economic activity. In addition, the agglomeration effect always brings forth the diversity effects. Naturally, the growth in the number of firms and consumers in the city leads to diverse choices not only in respect of goods and services, but also for employees, which stimulates the development of the city in the aggregate, creating additional economic benefits not only for the economic entities but also for the consumers.

The interaction of workers within million-plus cities is enhanced, allowing them to make better use of the knowledge, experience and technology of different businesses. That is, the emergence of agglomeration externalities will be a significant factor in the development of high-tech and innovative sectors in big cities. The attractiveness of million-plus cities for these industries is accounted for by the availability of potential employees in terms of labour force quality. In general, it can be noted that the primary ground for the formation of urban agglomerations (million-plus cities) is the economic benefits engendered by the concentration of economic and innovation activities [28].

Natalya Zubarevich considers the growing attention to the development of agglomerations in Russia from a slightly different perspective [29]. She explains this process, firstly, by the polarised spatial development and the migration outflow of the population, not only from rural areas but also from small and medium-sized cities to major cities. Secondly, this attention is due to the current situation in Russia, when any other factors promoting development are few. The institutional environment is unfavourable for

development here; one can observe the qualitative deterioration of the human capital and its decline, largely determined by the specific age structure of the population [29]. However, the pluses of major city development include the presence of a large-scale service sector. Moreover, sophisticated services are increasingly predominant. The leaders of service economy development in Russia, in addition to Moscow and St. Petersburg, are Volgograd, Ekaterinburg, Kazan and some others. For instance, in Novosibirsk, the service economy employs five times more people than in the rest of the region. The service economy in the largest cities predetermines higher requirements for the development of transport which becomes the main source of air pollution.

Thus, the importance of the realisation of ESG principles in urban agglomerations is accounted for, on the one hand, by positive population dynamics and the need to preserve human capital, and on the other hand – by the increasing environmental load on the territory of these cities, caused primarily by the emission of transport pollutants into the atmosphere. Such emission is currently the most important factor in the deterioration of public health. In addition, the realisation of ESG principles in urban agglomerations is important in terms of the preservation and development of social capital and preventing the growth of social tension.

Russia's economic development is largely determined by the nature and dynamics of development of not only major cities but also the so-called regional capitals. They are home to about 30% of Russia's population and account for 40 to 70% of the GRP of each constituent entity of the Russian Federation. Importantly, the production output value per employee in the capital and major cities is on average 80% higher than in other regions. Many regional capitals form a predominant share of revenues on the budget of respective constituent entities of the Russian Federation. In particular, in Ekaterinburg, this value is about 50%, in Perm – 60%, in Chelyabinsk – about 70% [30].

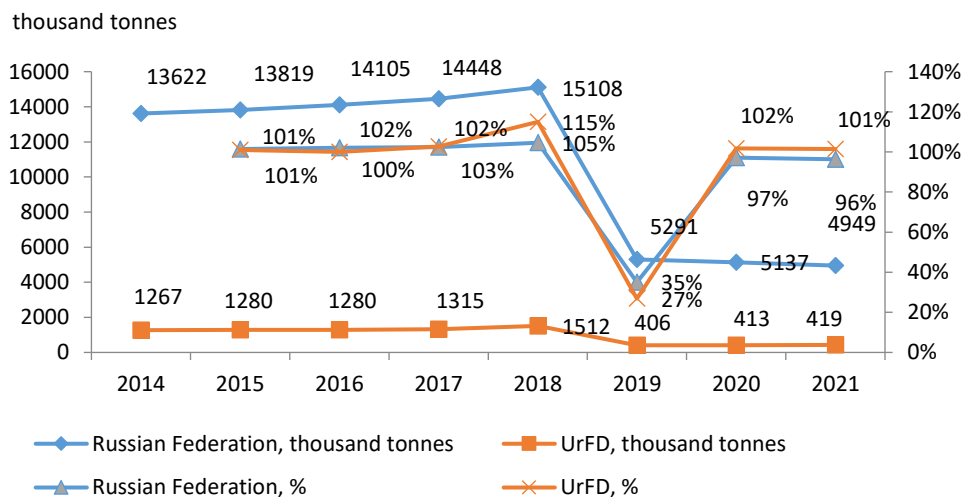
The need to implement ESG principles in the cities is confirmed by the change in the spatial distribution of Russia's population which gets gradually concentrated in the administrative centre of the country [31, 32]. The population of peripheral areas is drawn to regional centres and then relocates to larger cities, primarily Moscow and St. Petersburg. These cities have a positive influence on the development of Moscow and Petersburg suburban areas. Their joint development has provided for more than a third of the increment of the total GRP (Gross Regional Product) of the Russian regions and almost a quarter of the per-capita GRP increment [33]. But, in contrast to this situation in Russia on the whole, as shown by Druzhinin's studies, the influence of administrative centres' development on the growth of the regional economy in the aggregate is very weak in most regions [33].

## **5 Environmental misbalance in major cities**

It is inappropriate to consider the ecology of large cities in isolation from the overall environmental situation in the regions where they are located. The ecological situation in the regions, as conditioned by the operation of major industrial companies, indirectly affects the ecology of agglomerations that got formed in them. One of the best developed industrial centres of the country, the Ural Federal District, is characterised by the ecological overload of the entire territory. Industrial enterprises account for the largest share of air pollution here (89%), with the figure for transport-generated pollution being 11%. At the same time, the increment rate of pollution from road transport emissions is higher than that of industrial enterprises (Table 1).

Emissions from road transport account for 23% of the total air pollutant emissions in Russia; however, in terms of emissions from all mobile sources, this value is equal to 97% (Fig. 1). The CFD (Central Federal District) leads among all federal districts in terms of motor transport emission of pollutants into the atmosphere, which accounted for 23.3% of

all emissions in 2021. The UrFD (Ural Federal District) accounted for less than 9% in 2021. Among the constituent entities of the Russian Federation, Moscow leads in transport emissions, accounting for 28.1% of all CFD vehicle emissions in 2021. But if one considers the total emissions from motor vehicles in the Moscow region, this figure makes up 46% of all CFD motor vehicle emissions, accounting for 10.8% of the total Russian statistics. The share of motor transport emissions in St. Petersburg and Leningrad region is much lower in the all-Russian list (constituting 32.5% of Moscow region emissions) [34].



Note: The drastic, threefold reduction in atmospheric emissions across Russia and in UrFD in 2019 is not due to the intensified environmental protection activities, but is connected with changes in MAC (maximum allowable concentration) regulations. The same reduction level was recorded in all federal districts of Russia.

**Fig. 1.** Dynamics of emission of most common air pollutants from road transport in Russia and in UrFD [34].

In 2021, compared to 2020, transport emissions decreased by 3.5% in Russia, while in UrFD they increased by 2%, in particular, by 5.1% in the Sverdlovsk region and by 2.8% in the Chelyabinsk region. At the same time, emissions from enterprises in the Sverdlovsk region remained unchanged, but in the Chelyabinsk region, they increased by 2.2% over the same period.

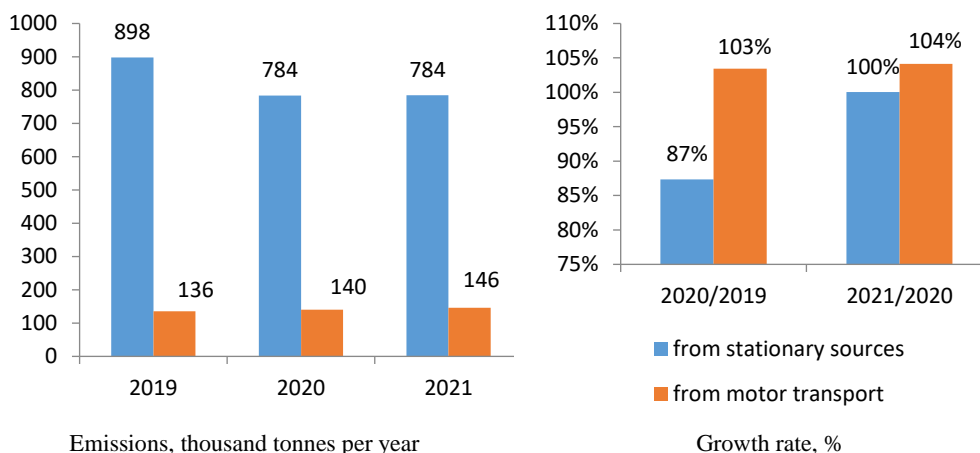
The ecological situation in the regions affects the atmospheric air both in the capital cities and other localities of the region. The main factor of atmospheric pollution in million-plus cities, not to count the situation in a particular region, is the emission of pollutants by mobile sources; at the same time, in the regions, the emission from stationary sources, i.e. enterprises, prevail (Table 1) [35].

**Table 1.** Dynamics of emissions from enterprises and motor transport in 2020-2021.

Region	Emissions by enterprises			Emissions by motor transport		
	2021, tonnes	Change in 2021 relative to 2020, %	Share of total emissions 2021, %	2021, tonnes	Change in 2021 relative to 2020, %	Share of total emissions 2021, %
Russian Federation	17,207,700	1.5%	77%	5,091,792	-3.5%	23%
UrFD	3,634,200	5%	89%	434,344	2%	11%

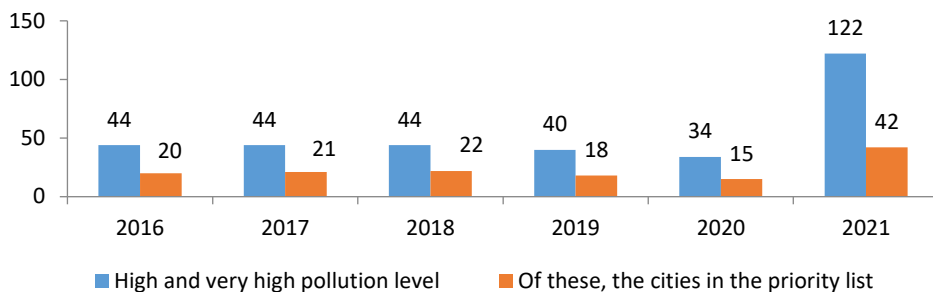
Region	Emissions by enterprises			Emissions by motor transport		
	2021, tonnes	Change in 2021 relative to 2020, %	Share of total emissions 2021, %	2021, tonnes	Change in 2021 relative to 2020, %	Share of total emissions 2021, %
Kurgan region	39,984	1.5%	58%	29,328	2.8%	42%
Sverdlovsk region	784,251	0.0%	84%	149,488	5.1%	16%
Tyumen region	162,965	0.0%	76%	51,419	-5.0%	24%
Khanty-Mansiysk Autonomous Area	1,231,140	7.8%	95%	70,831	-2.9%	5%
Chelyabinsk region	467,075	2.2%	81%	110,230	2.8%	19%
Yamalo-Nenets Autonomous Area	948,785	8.1%	98%	23,048	0.3%	2%

The example of the Sverdlovsk region shows that the growth rate of atmospheric pollutants emission from motor transport exceeds that from stationary sources (Fig. 2) [36].



**Fig. 2.** Dynamics of pollutant emission to atmospheric air in Sverdlovsk region [34].

This trend is characteristic, to an even greater extent, of big cities where industrial plants are mostly moved outside the city and the environmental condition depends primarily on motor transport emissions. In 2021, the Federal Service for Supervision of Natural Resources monitored air pollution in 251 cities in Russia. The number of cities where the average annual concentration of a particular pollutant exceeded 1 MAC (maximum allowable concentration) increased by 77 within a year, to 211. The number of cities where the air pollution level is assessed as high or very high according to the “atmospheric pollution index” (API) increased by 88 as compared to 2020. The cities with the highest air pollution level are included in the so-called priority list. In 2021, 42 cities were included in this list, whereas in 2000 their number was only 15 (Fig. 3) [34].



**Fig. 3.** Number of cities with high and very high air pollution levels, including those from the Priority List [34].

Cities with high and very high air pollution levels are home to 50.6 million people, representing 46% of Russia’s urban population. The ecological situation in million-plus cities is directly conditioned by motor transport emissions, with the share thereof being about 90% of the overall air pollution – for instance, in Moscow [37]. At the same time, it is practically impossible to reduce the flow of automobiles to business, shopping and administrative centres of Moscow. In order to limit this flow, certain restrictive measures are primarily used at present for private motor transport.

The dynamic development of Moscow transport over the last 10 years has led to drastic changes in the transport system structure. The population has been actively discouraged from using personal transport; a ban on the import and production of cars below the Euro-5 class was introduced at the federal level; a ban was as well introduced on the use of fuel below the Euro-5 class. The prospects of reducing greenhouse gas emissions in the transport sector are connected with the electrification of private, commercial and public transport. According to the forecasts for the year 2035, the share of passenger cars with electric motors will increase to 24%; the use of buses with internal combustion engines will be completely phased out [38]. All this will significantly improve the quality of atmospheric air in Moscow.

A total of 16.5 thousand electrically propelled vehicles were registered in Russia as of January 1, 2022; 68% of them are registered in three districts – Central, Far Eastern and Siberian. Ural, being the country’s industrial centre, traditionally lags behind the other regions in the number of electric vehicles that represent the friendliest mode of transport in terms of ecology. It accounts for only 7% of the Russian electric vehicle fleet. Most of them – 210 vehicles – are registered in the Sverdlovsk region (Table 2).

**Table 2.** Top 5 regions with registered stock of electric vehicles in 2021 [39].

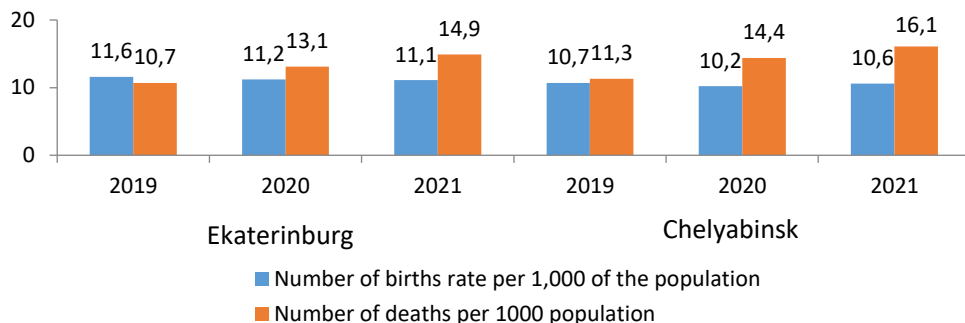
Russia, vehicles		Greater Ural, vehicles	
Moscow	2,161	Sverdlovsk region	210
Primorye region	1,652	Tyumen region	165
Irkutsk region	1,540	Republic of Bashkiria	139
Krasnodar region	1,085	Chelyabinsk region	135
Khabarovsk region	861	Perm region	123

Despite the small number of electromobiles in Ural, their sales growth rate was quite high. In 2021, compared to 2020, sales increased 2.5 times. As can be seen from Table 2, the Greater Ural regions have much fewer registered electric cars than other constituent entities of the Russian Federation. Moreover, most of them are registered in the capital



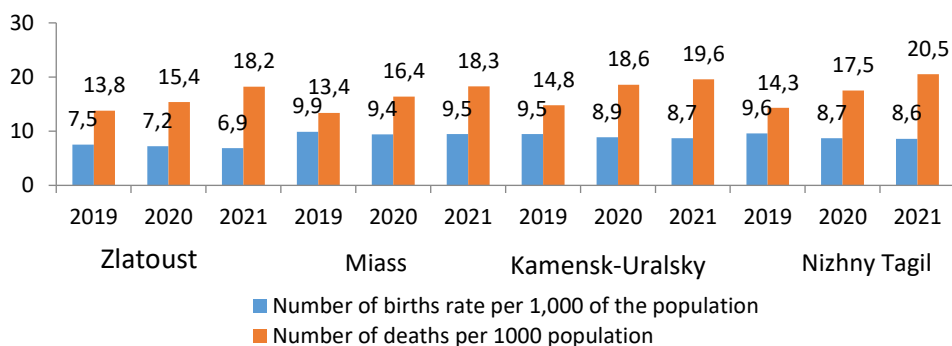
cities of these regions. However, the share of electric vehicles in the total urban car fleet of the marked regions is a hundredth of a percent. Thus, transport powered by internal combustion engines remains the main factor of air pollution in the largest cities of Ural and one of the reasons for the unfavourable demographic situation there [40].

In Ekaterinburg, for instance, the death rate per 1,000 of the population increased from 10.7 in 2019 to 14.9 in 2021, and in Chelyabinsk – from 11.3 to 16.1, respectively. However, in terms of the birth rate per 1,000 of the population, the situation is the opposite. The relevant indicators declined over the same period – in Ekaterinburg from 11.6 to 11.1, and in Chelyabinsk – from 10.7 to 10.6 (Fig. 4) [30].



**Fig. 4.** Demographic dynamics in the largest cities of UrFD.

It can be noted that the environmental situation in industrial cities of the Sverdlovsk region, largely determined by the overall high level of environmental pollution, is exacerbated by the use of motor transport with internal combustion engines (Fig. 5) [30]. This region shows as well a clear negative trend towards excess mortality rate over the birth rate numbers per 1,000 people.



**Fig. 5.** Demographic dynamics for industrial cities in Chelyabinsk and Sverdlovsk regions.

The undertaken analysis of the ecological situation in the largest cities evidences the increasing importance of compliance with ESG principles in their development strategies. Moreover, the successful realisation of strategic development of million-plus cities requires a balanced solution of the three main problems highlighted in terms of relevance in a number of works [17, 19, 41]. First of all, they include competitiveness ensured by modern infrastructure, transport in particular, as well as proper quality of services meeting the demands of highly qualified specialists. The second problem is ensuring the due life quality

of the urban population. The third important problem which can be resolved only through qualified management of urban territories is environmental protection.

However, in the context of the new reality largely determined by the sanctions regime, the discourse on possible strategies for the development of the national economy as a whole and its major cities, in particular, gets intensified. The issue of prioritising the formation of internal development grounds or the efforts towards integration, mainly with reliance on friendly countries, remains open. The drastically reduced potential for the use of external environment resources needs to be commensurate with the assessment of the national market, its state, capacity and domestic demand growth trends. The consensus reached on the problem under discussion is grounded on the fact that the priority of further development of the Russian economy will be given to the country's own internal resources instead of reliance on foreign loans that guaranteed easy and long-term money. This circumstance forms a new situation engendered by the increased importance of the national resources for solving new problems, which enhances the relevance of strengthening the internal demand, the need for available massive liquidity in the economy and the due amount of "long-term money", etc. [42]. The curtailment of funding sources naturally leads to a tighter choice of investment priorities for the development of the Russian economy, with due measures aimed to improve the ecological and social situation in million-plus cities.

Even so, the importance of implementing the ESG principles in the economic life of the country as a whole and in the largest cities, in particular, seems to have no alternative.

## **6 Municipal economic policy**

In large cities the development strategies are forcefully adjusted in the context of large-scale sanctions; therefore, it is important to maintain the ESG principles in all sectors of the urban economy. Their compliance will largely be determined by the level and quality of municipal economic policy development. Its empirical basis is statistics. However, the Russian statistics do not provide for calculation on a city level, even if we take such an important indicator as the gross added value. It can be noted that the available official statistics in the context of a "city" is extremely scanty. Many indicators necessary for the analysis of the situation in the cities are not subject to official statistical recording. A reform of the statistical system towards accentuation of the "urban" component should become an important stage in the development of modern municipal policy. Such policy should be aimed at the improvement of people's quality of life; its efficiency in the new environment would be guaranteed by the successful implementation of ESG principles in the development strategies for major cities. The assumed central elements of the policy include the creation of a favourable regulatory and administrative environment, the development of modern infrastructure, and improvement of the environmental quality [43]. The worldwide experience shows that the solution to interrelated ecological, transport and social problems of million-plus cities requires a comprehensive approach towards forming the image of a city of the future, which requires long-term strategic planning for at least 20-30 years [17].

Thus, the successful realisation of the ESG agenda in Russian million-plus cities requires the development of municipal economic policy that provides for an optimal combination of economic, social and ecological aspects of development. Such a policy should be proactive rather than adaptive in nature, aimed at improving people's quality and standards of living. It is feasible, within the framework of the regional industrial policy for RF constituent entities, to provide for a special section dealing with a municipal industrial policy that would systematise the administrative and motivating measures towards implementing the ESG agenda for million-plus cities [44]. Such measures will presumably

include, as the most significant, the ones to support the development of electrically propelled transport in major cities along with the related charging infrastructure; those to intensify the financial activities in the context of a “green” agenda and aimed to achieve the balanced realisation of economic, environmental and social priorities in development strategies for major agglomerations.

## 7 Conclusion

The territorial organisation of the Russian economic system is characterised by the increasing role of big cities which are becoming one of the main subjects of modern economic policy. An important feature of such cities is their unique ability to generate a special space with central elements represented by a service economy and knowledge-based economy. On the one hand, this attracts the most active and talented people as well as capital assets to major cities; on the other hand, it creates environmental and social problems. To resolve them, a certain development strategy for large cities seems to have no alternative: its central element is the realisation of ESG principles, which confirms the hypothesis of the present research.

The long-term accumulation of complex, contradictory and interrelated problems in Russia, caused by transformation processes in the socio-economic systems of different levels, has brought forward the formation of a new economic reality; the most important characteristics of this reality are the growth of social inequality, environmental overload of the territory, etc. This predetermined the emergence of debt to future generations as a real problem [45]. Despite the difficult conditions of functioning in the sanctions regime, it seems that the realisation of ESG principles in Russian cities can become one of the directions towards reducing the mentioned debt to future generations.

The solution to the problems raised in this article seems to be important not only for Russia but also for major cities of the world. Continued research in this direction may be of interest to both Russian and foreign specialists working in the sphere of humanisation of development problems inherent in the largest cities. If sufficient information appears in the public domain, pointing to aggravation of the situation with marginal groups within the framework of intensified contradictions concerning the development of major cities, then special studies may be undertaken aimed to identify alternative approaches to the solution of this problem in different countries of the world.

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