THE CITY OF MOSCOW GREEN BOND FRAMEWORK

April 2021

The City of Moscow is the capital and most populous city of the Russian Federation

The City's population

12,6 million people

Tends to grow
in the past five years, it increased **by 300,000 residents.**

The City of Moscow's gross regional product (GRP) at year-end 2020 was estimated at

₽19 trillion

The City of Moscow accounts **for around one-fifth of the total gross** value added generated by all Russian regions.

The City of Moscow ranks high in international rankings

In 2020

Moscow was included in IQAir's World regional capital city ranking of capital cities, which meet the World Health Organization (WHO) requirements regarding ultrafine (class PM2.5) particles concentration in the air according to IQAir World regional capital city ranking[1].

Moscow was included, for the first time, in "List A" of the Carbon Disclosure Project (CDP)'s ranking of cities that are best performers in terms of sustainable development and carbon sequestration[2].

12th ranked

in the fDi Intelligence's European Cities of the Future ranking [3]

17th ranked

in the InterNations' Best and Worst Cities for Expats ranking[4]

In 2021

4th ranks

in the Resonance Consultancy's World's Best Cities ranking[5]

22th ranks

in fDi Intelligence's Global Cities of the Future ranking, **where it also ranks 2nd among the world's largest megapolises in terms of foreign direct investment promotion**[6]

Sources:

1. https://www.iqair.com/world-most-polluted-cities/world-air-quality-report-2019-en.pdf
2. https://www.cdp.net/en/cities/cities-scores
3. https://www.fdiintelligence.com/article/76767
4. https://www.internations.org/expat-insider/2020/the-best-worst-cities-for-expats-40063
5. https://www.bestcities.org/rankings/worlds-best-cities/
6. https://www.fdiintelligence.com/article/79334

The City of Moscow has a robust fiscal system

Budget performance	2018, RUB billion	2019, RUB billion	2020, RUB billion
Revenues	2 377	2 631	2 869
Expenditures	2 315	2 685	3 006
Deficit «–»/ surplus «+»	62	-54	-137

The City of Moscow funded its 2019–2020 fiscal deficit **using its own reserves intended to cover fiscal gaps.**

At the beginning of 2021, Moscow's Government debt totaled

₽30 billion,

or around 1 % of its annual revenues.

1. GENERAL PROVISIONS

| 1. 2. ON THE CITY OF MOSCOW'S GREEN BOND FRAMEWORK

The purpose of this Green Bond Framework (the Framework) **is to demonstrate the alignment of government bonds issued by the City of Moscow with the Green Bond Principles 2018 promoted by the International Capital Market Association** (ICMA's Green Bond Principles).

The Framework is consistent with **the Guidelines for Sustainable Investing in the Russian Federation, developed by State Development Corporation VEB.RF (the «VEB.RF Guidelines»).**

The City of Moscow's green bonds will be issued in several phases. Information concerning each new green bond issue will be included in the Framework by way of supplementation. However, **the list of projects** to be financed with bond proceeds (Item 4.2 of the Framework) **will remain unchanged.**

Currently, the Framework applies to the 74th issue of the City of Moscow's government bonds (identification number: RU26074MOS0).

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

The City of Moscow maintains a policy that demonstrates its commitment to global sustainable development goals (SDGs), adopted by the United Nations (UN) member states in 2015 as part of the 2030 Agenda for Sustainable Development.

- Since 2019, the City of Moscow has been participating, **together with eight other cities and regions,** in the «Territorial Approach to the SDGs» **pilot project initiated by the Organisation for Economic Cooperation and Development** (OECD)[1].

- The project aims at monitoring the implementation of **the 17 SDGs by different cities and regions**, and analyzing a local policy alignment with the UN Sustainable Development Agenda.

Preliminary estimates of the 2020 pilot project performance suggest that **the City of Moscow was above OECD regions' average in areas related to four sustainable development goals**, namely, «Good Health and Well-being» (SDG-3), «Gender Equality» (SDG-5), «Sustainable Cities and Communities» (SDG-11), and «Partnerships for the Goals» (SDG-17).

The City of Moscow has achieved several goals, **including those related to general and youth unemployment, number of physicians per 1000 people, and number of patent applications per million population.** Furthermore, the City of Moscow has outperformed an average OECD region in areas such as:

- the proportion of households with permanent internet access via broadband networks;
- gender equality in terms of full- and part-time employment;
- road traffic death rate (per 100,000 population).

[1] https://www.oecd.org/cfe/territorial-approach-sdgs.htm

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.1. KEY ENVIRONMENTAL PRIORITIES AND OBJECTIVES

Urban nature preservation, environment improvement, and climate change management are absolutely necessary for a city's sustainable development and are viewed by the City of Moscow as its environmental priorities

The environmental priorities have been set out in the Moscow Government's Decree No. 394-PP dated 10th July 2014 «On the Basic Provisions of the City of Moscow's New Environmental Policy for the Period up to 2030», while the key development targets are specified in the Public Programmes of the City of Moscow.

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.1. KEY ENVIRONMENTAL PRIORITIES AND OBJECTIVES

The key targets and principles of the City of Moscow's environmental policy are the following:

Prioritized conservation of biodiversity, natural ecosystems, landscapes and complexes

At year-end 2020, the City of Moscow **had 136 specially protected nature conservation areas covering more than 19,500 hectares.** Measures to preserve urban biodiversity, including those to restore natural ecosystems, establish recreation reserves, and feed wildlife in winter are taken on a permanent basis.

Recognition of the environment as a public health and well-being factor

The City of Moscow gradually **decreases public health risks** by preventing/ controlling the pollution of the environment, including air. Every year, the Moscow Government calculates the composite air quality index based on monitoring results and in accordance with the WHO recommendations.

Qualitative transformation of the City's transport system to ensure good air quality, decrease noise pollution and reduce anthropogenic emissions

In 2012, the City of Moscow adopted **a new transport policy, which prioritizes the development of environmentally friendly public transport.** Motor transport emissions in the City of Moscow totaled 334,000 tonnes in 2019 (down 2.7x compared with 2010).

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.1. KEY ENVIRONMENTAL PRIORITIES AND OBJECTIVES

A gradual shift to a low-carbon economy

with a view to encompass as many industrial and commercial sectors as possible to decrease the carbon footprint and mitigate climatic impact. Measures to reduce greenhouse gas (GHG) emissions and adapt to the climate change are being implemented in all sectors. Moscow has achieved **a 25 % GHG emissions decrease relative to 1990**, the goal set out in Decree No. 752 dated 30th September 2013 of the President of the Russian Federation.

Expansion of green space (parks, gardens, streetscapes, etc.) at the expense of undeveloped land and former industrial areas.

Starting in 2012, a number of major projects have been carried out to establish community and business quarters, as well as landscaped residential neighbourhoods in place of former industrial areas. Every year, trees and shrubs are planted under the City's greening programmes. More **than 9.5 million trees and shrubs** have been planted in the City of Moscow in the past 10 years.

Fundamental change in the balance of solid waste burial, incineration and recycling

Fundamental change in the balance of solid waste burial, incineration and recycling, with the minimization of burials rate and significant increase of the recycling rate for both municipal and production wastes. In 2020, Moscow organized solid municipal waste (SMW) sorting at source.

Over 66,000 trash containers were placed on more than 22,000 container sites in residential and commercial areas. They are in two colours and intended for the collection of co-mingled waste and recyclable SMW elements. The introduction of waste sorting led to an increase of SMW elements turned into recycled products. In 2020, **recycling grew 51 % y/y to 0.855 million tonnes.**

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.1. KEY ENVIRONMENTAL PRIORITIES AND OBJECTIVES

Environmental transparency

The Moscow Government is committed to environmental transparency. Online environmental data are fed into the Moscow City Environmental Monitoring Single Data Pool automated data system[1] **(displaying more than 51,000 readings a day)** and are available online to the City residents . A consolidated analytical report on the environmental state of the City of Moscow in published every July on the Mayor and the Moscow Government official website[2] .

Promotion of the environmental culture

The City of Moscow's environmental education and awareness system is designed to provide ecological learning experiences to all age groups. Ten specialized centers have been established and equipped to deliver environmental education programs. Environmental learning for pre-school and school children is provided through interactive games. **Over 500,000 people participated in more than 12,000 educational events** in 2020. The Moscow Government supports initiatives to promote the environmental culture.

The City of Moscow's system of Public Programmes corresponds with the above priorities.

THE KEY OBJECTIVE IS TO ESTABLISH A COMFORTABLE AND SAFE URBAN ENVIRONMENT

[1] mosecom.mos.ru
[2] mos.ru

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.1. KEY ENVIRONMENTAL PRIORITIES AND OBJECTIVES

The City of Moscow's of Public Programmes set a number of performance indicators for 2017–2021.

These include:

1

Greenhouse gas emissions (cumulative) reduction **by 8 982 370 tonnes of CO2 equivalent starting in 2012.**

Accelerated reduction in GHG emissions in 2022-2023 **to achieve a 'snapshot running total of 10 301 870 tonnes.**

2

Reduction of the City of Moscow's GRP energy intensity **to 2.7 from 3.2 kg of coal equivalent per RUB 1 thousand**

In 2022–2023, GRP energy intensity should stabilize **at 2.7 kg of coal equivalent per RUB 1 thousand.**

Corresponding environmental indicators for 2022-2023 are to be approved before the end of 2021.

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.2. THE CITY OF MOSCOW'S PARTICIPATION IN THE NATIONAL ENVIRONMENTAL PROJECTS

The City of Moscow is engaged in the Housing and Urban Environment national project.
The City of Moscow carries out two regional projects aimed at achieving Russia's national priorities.

The Volga River Environment Enhancement regional project

Concerned with controlling wastewater effluents released in the City area into the Moscow River, the Volga tributary, by monitoring key water-quality characteristics.
The project envisages:

Reducing discharged effluents that end up in the Volga River

from 1,37 km³ in 2019 to 0,45 km³ in 2024

Increasing purification capacities that help reduce the effluents ending up in the Volga River

to 0,92 km³ in 2024

1

Integrated Solid Municipal Waste Management System regional project

Concerned with promoting the SMW processing and achieving the following quantitative targets:

Raising the rate of SMW processing through reclamation

from 15,5% in 2019 to 36% in 2024

Raising the rate of SMW processing through recycling

from 33% in 2019 to 60% in 2024

2

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.3. THE CITY OF MOSCOW'S INTERNATIONAL ENVIRONMENTAL COMMITMENTS

Since 2011, the City of Moscow has been the first and only Russian City with a membership in the C40 Cities Climate Leadership Group. The City of Moscow pursues its climate policy in line with the principles adopted internationally by the C40 member cities.

In 2019, the City of Moscow and other megapolises, signed **the C40 Green and Healthy Streets Declaration.**

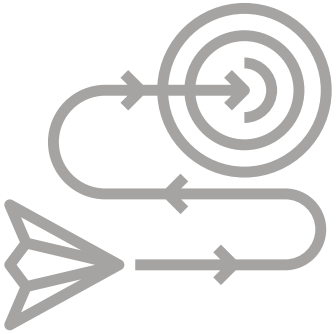
The Moscow Government committed to transforming its civic spaces into greener and healthier places to live, with streets free of fossil fuel. It implies, **among other things, a shift towards using zero GHG emission buses from 2025.**

In 2019, the Moscow Government and the WHO signed an agreement on cooperation in the fields of environment and health care.

- The agreement aims to reduce the burden of diseases caused by environmental factors.
- One of such factors is atmospheric air pollution by ultrafine (classes PM10 и PM2,5) particles, which come from different sources, including the motor transport.

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.4. ESTABLISHING A MODERN AND ENVIRONMENT-FRIENDLY TRANSPORT SYSTEM



To live up to its international commitments, the Moscow Government is **systematically** pursuing **a package programme policy**, intended **to reduce air pollution from vehicles and engines.**

The public transport prioritized development is carried out through a number of major projects

The metro system expansion

Integration of railway lines (Moscow Central Diameters) linking Moscow to the Moscow Region

Renewal of the public transport **rolling stock**

Introduction of new freeway lanes for public transportation vehicles (bus lanes), etc.

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.4. ESTABLISHING A MODERN AND ENVIRONMENT-FRIENDLY TRANSPORT SYSTEM

Another project is intended to reduce road traffic emissions through **the modernization of the City of Moscow's road system** by transforming the traditional radial-circular structure into a net with new direct highways and **renewed outbound routes in addition to state-of-the-art crossroads, bridges and tunnels.** When completed, **this project should improve the connectivity of the road infrastructure elements,** reducing excessive mileage and diminishing traffic congestions that increase vehicle emissions compared to smooth traffic flow conditions.

An intensive public transport development is a way to control traffic expansion. At the same time, the road and street network modernization is a prerequisite to increasing the surface urban transport efficiency, including the separation of special road sectors for public transport.

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

| 2.4. ESTABLISHING A MODERN AND ENVIRONMENT-FRIENDLY TRANSPORT SYSTEM

The City of Moscow takes systematical measures to stimulate vehicle upgrading:

In September 2015, a low-emission zone for **buses** was established, covering most of the City of Moscow within the Ring Road (the Moscow Ring Road, MRR). It is a protected zone, where buses that **do not comply with Class 3 environmental requirements** (similar to the Euro 3 standard) are barred;

The City of Moscow has introduced:
- environmental requirements **for private carriers**, which handle passenger bus routes (**not lower than Euro 4**);

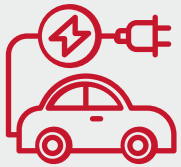
In January 2017, low-emission zones for heavy duty vehicles were established. One zone, covering most of the City of Moscow within the MRR, is where heavy **duty vehicles failing** to meet **the Class 2 environmental requirements** (similar to the Euro 2 standard) cannot circulate; another zone, covering the City of Moscow center within the Third Ring Road, is where heavy **duty vehicles** that do not comply with **Class 3 environmental requirements** (similar to the Euro 5 standard) are barred.

- environmental requirements for cars purchased by taxi and carsharing operators **with the use of the City of Moscow's subsidies (not lower than Euro-3 and Euro 4, respectively).**

2. THE CITY OF MOSCOW'S SUSTAINABLE DEVELOPMENT PRIORITIES

2.4. ESTABLISHING A MODERN AND ENVIRONMENT-FRIENDLY TRANSPORT SYSTEM

The City of Moscow promotes the cycling infrastructure, encouraging the use of new, «environmentally friendly» vehicles.



Owners of personal electric vehicles are exempt from the transport tax and entitled to free parking. The City of Moscow supports the development of charging stations for electric vehicles and continues to promote road transport alternatives to personal cars, such as car-sharing and affordable taxi service.

The transport policy implementation allowed a significant reduction in contaminant concentrations near city roads to be achieved, as proven by environmental monitoring:

CONTAMINANT CONCENTRATIONS NEAR CITY ROADS, MG/M3[3]

Concentration/ year	2013	2014	2015	2016	2017	2018	2019	2020
Carbonic oxide	0,64	0,62	0,50	0,49	0,41	0,47	0,40	0,38
Sulphur dioxide	0,0050	0,0060	0,0030	0,0030	0,0031	0,0030	0,0019	0,0024
Nitrogen dioxide	0,051	0,054	0,048	0,047	0,047	0,046	0,039	0,038
Nitrogen oxide	0,040	0,035	0,025	0,026	0,025	0,028	0,021	0,019
Airborne particulate matter (PM2.5)	0,031	0,023	0,018	0,021	0,025	0,021	0,020	0,016

3. MOSCOW'S ENVIRONMENT COMPONENT MONITORING SYSTEM

The Integrated Environmental Monitoring System (IEMS) has been developed and implemented in the City of Moscow to evaluate the condition of the environment components and monitor the progress of the City's environmental projects. The IEMS comprises a network of around **600 high-precision monitoring stations**, sections and observation sites, used to control the state of atmospheric air, water bodies, groundwater, green spaces, soil, as well as sub-soil and lower horizons. The IEMS is fully aligned with the EU directives and the WHO recommendations.

Furthermore, the City of Moscow has an automated system for local environmental monitoring (for a direct instrumental measurement of industrial emissions), **which covers 164 emission sources related to 54 organizations.**

The bottoms and banks of **10 water bodies are monitored from 61 observation points** to detect slope horizontal and vertical deformations. **24 protected water body buffer zones are monitored from 81 reference areas.**

In 2020, surface water quality monitoring was performed at **66 points** (monitoring sections). Over the past ten years, the City's reservoir water monitoring system was equipped **with 24 new monitoring sections (points)**. The City of Moscow operates Russia's only automated surface water quality monitoring station.

The City's Geological Service monitors 13 slopes prone to deep landslides and 75 river valleys prone to small (shallow) landslides. A network of **169 observation hydrogeological wells** is employed. A geo-environmental survey **of Moscow's 193 springs and 56 wells** is carried out annually.

3. MOSCOW'S ENVIRONMENT COMPONENT MONITORING SYSTEM

The City of Moscow's green spaces (trees, shrubs and lawns in the so-called I-, II- and III-category green areas, such as road borders, boulevards, squares, parks, and residential areas) **are monitored every year from 210 observation sites.**

The air monitoring network includes

60 stationary sampling points

They are sited at different distances from the City center in areas close to major roads, in residential areas that are either distanced from sources of air pollution or affected by industrial emissions, and in natural ecosystems.

The number of air sampling points has increased

x1,7

since 2010

The City has three sophisticated mobile air quality monitoring laboratories, which providing rapid emergency response monitoring services around the clock.
Every year, they monitor more **than 1,100 locations.**

THE CORE COMPONENTS OF THE GREEN BOND PRINCIPLES INCLUDE:

- Process for Project Evaluation and Selection
- Management of Proceeds
- Use of Proceeds
- Reporting

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.1. PROCESS FOR PROJECT EVALUATION AND SELECTION

The list of projects to be financed with funds equivalent to 100 % of proceeds from green bond issuance was made up using the following procedure

Stage 1 Setting up the Task Force and assessing the possibility of green bond issuance

A Task Force was established in accordance with the Mayor of Moscow's Order No. 663-PM dated 15th December 2020 to arrange and support the placement of the City of Moscow's bonds (the «Task Force»). The Task Force was chaired by a Deputy Mayor of Moscow for Economic policy and Property and Land Relations, and a Deputy Mayor of Moscow – Head of the Office of the Mayor and of the Government of Moscow.

In accordance with the Provision on the Task Force, the Task Force functions include the support of the green bond issuance and the development of recommendations on the list of projects to be financed with green bond proceeds, as well as the preparation of issue documents and reports on the use of funds equivalent to the green bond proceeds.

The Task Force members are officials representing:

- The Office of the Mayor and of the Government of Moscow;
- The Moscow Finance Department;
- the Moscow Department of Economic Policy and Development;
- the Moscow Department of Competitive Policy.

The Natural Resource Management and Environment Protection Department was involved, on a permanent basis, in the Task Force activities to resolve issues related to the selection of projects to be financed and assessment of their environmental effect, as well as the Framework development.

Also, the Task Force engaged the following departments representatives to prepare the issuance of green bonds:

- The Department of Transport and Road Infrastructure;
- The Department of Construction;
- The Housing and Utilities Department.

The Task Force assigned the Moscow **Department of Economic Policy and Development** to assess the green bond issuance possibility and to prepare a tentative eligible project list.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.1. PROCESS FOR PROJECT EVALUATION AND SELECTION

Stage 2.
Tentative list of eligible projects

The Moscow Department of Economic Policy and Development prepared a tentative list of eligible projects at the request of the Task Force.

The list includes both projects already in progress and envisaged projects specified below. The eligible projects are consistent with the UN Sustainable Development Goals.

UN Sustainable Development Goals	Eligible project category
Greening of the transport	- public transport network development (construction of lines, stations, depots, etc.); - public transport rolling stock renewal; - electromobile infrastructure development; - financial support of private taxi/carsharing operators' car fleet renewal and substitution with zero-emission vehicles.
Energy efficiency enhancement	- introduction of energy-conscious technologies, incl. energy-saving street lighting, regenerative lifts, etc.; - introduction of energy generation enhancement technologies; - renewable energy sources.
Waste management	- use of equipment allowing SMW treatment and sorting enhancement; - environmentally-friendly SMW recycling technology allowing energy recovery.
Green buildings	-construction and refurbishing of buildings with a BREEAM rating of Very Good, Excellent, or Excellent, or similar ratings from other building environmental certification authorities.
Sustainable use of nature resources and biodiversity	- biodiversity accounting, conservation and restoration; - restoration of degraded ecosystems and natural objects; - landscaping with the use of endemic plants.
Measures to adapt to climate change	- mapping of climate change related risks; - prevention of flooding.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.1. PROCESS FOR PROJECT EVALUATION AND SELECTION

Stage 3. Project evaluation

The tentative list of eligible projects was evaluated by the City of Moscow responsible departments.

The evaluation was based on the following eligibility criteria:

- project purpose alignment with ICMA's Green Bond Principles and VEB.RF recommendations;
- project importance from the perspective of the City of Moscow's environmental objectives and commitments;
- availability of an expert assessment of the project impact on the environment, including atmospheric air, hydrosphere, soil, plant and animal life, as well as an assessment of the project-related construction noise.

The final list of eligible projects was completed and submitted to the Task Force for consideration.

Stage 4. Projects approval.

The Projects indicated below were approved for inclusion in the Framework at the Task Force meeting on 28th January 2021.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.2. USE OF PROCEEDS

One eligibility criterion for projects to be financed from green bond proceeds in 2021–2023 was their potential contribution to the reduction in emissions from the motor transport.

The City of Moscow undertakes to allocate **100 % of funds equivalent to the City of Moscow's green bond proceeds to the green projects specified in the Framework.**

Expenditures related to the project implementation will match the City of Moscow's green bond proceeds or exceed it.

THE SPECIFIED PROJECTS INCLUDE THE FOLLOWING.

PROJECT 1

Moscow bus fleet replacement with electric buses

PROJECT 2

Expansion of the metro system

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.2. USE OF PROCEEDS

PROJECT 1 – Moscow bus fleet replacement with electric buses.

Beginning in 2018, the City of Moscow has been systematically replacing its bus fleet with electric buses.

The City of Moscow today is the number one electric bus operator in Europe (with the largest number of electric buses in one city).

AT THE BEGINNING OF 2021, THE CITY OF MOSCOW

operated **installed**

around **600** **electric buses**

on **44** **city routes**

and had more than **100** **charging stations for electric buses.**

THE CITY PLANS TO PROCURE
AROUND 400 ELECTRIC BUSES IN 2021

The environmental effect of this project can therefore be quantified as follows:

- the replacement of one Euro-4 class and one Euro-5 class diesel bus with an electric bus allows pollutant emissions decrease of 260.5 and 189 kg/ year, respectively;
- the replacement of one diesel bus with an electric bus allows CO_2 emissions decrease in 60.5 t/ year on average.

- Pollutant emissions from one **Euro-4 class bus and one Euro-5 ecological class bus are 290.5 and 219 kg / year**, respectively.
- Indirect emissions from one electric bus (related to the generation of electricity needed to recharge it) **are approximately 30 kg / year[1].**
- **CO_2 emissions from one diesel bus and one electric bus are estimated at 64.9 and 4.4 t / year on average**, respectively.

Besides, the procured electric buses are more comfortable, which encourages the use of public transport:

- electric buses are equipped with climate control, USB connectors for charging mobile devices, and information media screens;
- they have a low floor level, a crowding aisle, and a ramp for passengers, including limited mobility passengers and passengers using strollers and bicycles;
- their passenger compartments have lower noise and vibration levels compared with ordinary buses.

[1] Disregarding emissions from diesel-powered passenger compartment heaters, which may be used in the cold season, when temperatures are -5C° and lower. However, the City plans to procure, from 2022, electric buses equipped with larger-capacity batteries to allow passenger compartments to be heated with electricity rather than diesel fuel.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.2. USE OF PROCEEDS

PROJECT 2 – Expansion of the metro system

The metro is currently the most popular public transport in Moscow, accounting for around **45 % of the City of Moscow's passenger traffic**. Considering the City of Moscow's significant size, high-speed rail is an optimum mass passenger transportation system from the viewpoint of the city's «integrity» for passengers, in terms of «connectivity» of the farthermost locations and central areas, and from the environmental impact.

Per passenger indirect emissions related to the generation of electricity needed for the metro operation **are approximately 200 times as low as per passenger emissions from motor vehicles.** The metro expansion prevents the growth of surface traffic flows and reduces them due to the substitution effect. The metro is a stand-alone transport, independent of the overstretched road network.

For this reason, the metro development in the City of Moscow **is currently the most environmentally friendly way to increase the residents' mobility.**

In addition, **the metro expansion is accompanied by the development of the «last mile» transport** (such as bicycles and electric scooters), providing local mobility.

Metro line extension is among the City of Moscow's highest priorities. The metro system is being developed at an unprecedented pace.

Years 2011–2020 saw the commissioning of

108 km of lines | **57** stations | **10** electric depots

The City of Moscow consistently improves the metro accessibility to the residents of remote locations, integrates the metro with railway and other types of transport communication through the construction of hubs, rolling stock renewal, and measures to adapt the metro infrastructure for disabled people.

Newly commissioned lines and stations **are increasingly comfortable and speedy**, which increases the metro attractiveness relative to private vehicles.

As a result of the metro system expansion

Consequently, Moscow residents increasingly abandon their cars in favour of the public transport, the result being decreased emissions CO_2 and other pollutants.

Furthermore, the introduction of new metro lines decreases noise pollution from road transport through the reduction of traffic flow intensity.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.2. USE OF PROCEEDS

PROJECT 2 – Expansion of the metro system

Under this project

2021–2023 Is to be financed

The construction

18 stations // **43,8** km of lines

The reconstruction

3 stations // **4** km of lines

Currently the construction of the Big Circle Line (BCL), which will become the world's longest metro circular line, is in progress and expected to significantly improve the City of Moscow's connectivity and lessen the on central interchange hubs load.

BCL includes:

31 stations | **70** km of lines | **19** transfers to radial metro stations | **6** transfers to the Moscow Central Diameters | **11** transfers to railway stations

The following is anticipated by 2025 as a result of the City of Moscow's metro system development:

- the BCL passenger traffic on a working day will total **677,000 people**;
- the metro and the Moscow Central Circle (MCC) total passenger traffic on a working day will increase **to 8 939 000 from 8 730 000 people.**

Section	Lines to be commissioned in 2021–2023, km	Stations to be commissioned in 2021–2023
North-Eastern	7,2	Maryina Roshcha, Rizhskaya, Sokolniki
Eastern	11,4	Textilshchiki, Pechatniki, Nagatinsky Zaton, Klenovy Boulevard
Prospekt Vernadskogo – Kuntsevskaya	9,2	Prospekt Vernadskogo, Michurinsky Prospekt, Aminevskaya, Davydkovo
Southern, incl. the reconstruction of the section between Kashirskaya and Kakhovskaya stations[1]	11	Zyuzino, Vorontsovskaya, Novatorskaya, Kashirskaya (reconstruction), Varshavskaya (reconstruction), Kakhovskaya (reconstruction)
Western	9	Narodnoe Opolchenie, Mnevniki, Terekhovo, Kuntsevskaya

After the commissioning of the above BCL sections in 2023, at least 10,000 cars will stop being used on a daily basis to produce the following environmental effect:

- a 885.5 tonne/ year decrease in pollutant emissions;
- a 20,900 tonne/ year decrease in CO_2 emissions[2].

The discussed effect will be achieved gradually and will be a long-term one.

[1] The reconstruction includes infrastructure modernization, the replacement of utilities and rails, cladding of walls and platforms of the Kakhovskaya, Varshavskaya and Kashirskaya stations, as well as the construction of additional transfer from the Kakhovskaya station to the Serpukhovsko-Timiryazevskaya line.

[2] If extraordinary force majeure circumstances occur, preventing the commissioning of a station or a section announced, funds may be allocated to other metro lines or stations, whose construction would produce a not less than announced environmental effect.

PROJECT 2 – Expansion of the metro system

- Project documents provide a number of measures to mitigate the impact of the metro lines construction on the components of the environment.
- These measures will depend on the construction site location, construction processes used. But in any case, they will include measures to protect atmospheric air and groundwater, reduce noise pollution and other “physical” impacts, and dispose of construction debris through recycling.

Motor vehicles and technological equipment are the main sources of air pollution during the construction work.

Motor vehicles and technological equipment are the main sources of air pollution during the construction work. The permissibility of the project construction activities in the urban layout context was assessed by modeling the dispersion of pollutants emitted during the equipment maximum utilization. Modelling suggested that the project impact within protected zones was acceptable and that pollutant concentrations did not exceed permissible levels.

Under unfavorable (calm) weather conditions, measures are envisaged to shutdown equipment partially or completely to prevent ground-level air pollution.

- To reduce noise pollution to established standards, **time limits for "noisy" construction work** are envisaged, as are noise-attenuating equipment (protective covers) and noise protection screens.

  Construction sites will allow for the collection and local treatment of surface runoff water, as well as **its subsequent discharge to the centralized storm sewer networks**. To prevent the runoff contamination outside the construction sites, a vehicle **wheel wash allowing water local treatment is to be used.**

- In constructing a tunnel that passes through a water body, **works to restore the water body ecosystem**, including aquatic life, are envisaged. In the course of restoration, **the valuable young sterlet will be released** into the waters of the Volga-Caspian fishery basin.

- **An automated waste accounting and control system** is used to efficiently handle construction wastes and soils and arrange for their recycling in the City of Moscow. The wastes and soils are commonly of the 5th hazard class and are subject to recycling at appropriate facilities of the City of Moscow and the Moscow Region.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.3. MANAGEMENT OF PROCEEDS

The City of Moscow will use 100 % equivalent to its green bond proceeds to finance/ refinance the projects specified in the Framework and prepare appropriate annual reports.

In addition, the City of Moscow will keep records of expenditures related to the projects specified in the Framework and monitor the matching of the expenditures to its green bond proceeds.

If there are unallocated Bond proceeds at the end of financial year, in which funds were raised, the City of Moscow undertakes to deposit the equivalent to unallocated proceeds in bank accounts in accordance with the procedure established Moscow Government's Decree No. 594-PP dated 21st December 2011.

The deposit maturity will be selected to prevent delay the financing of the eligible projects specified in the Framework.

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.3. MANAGEMENT OF PROCEEDS

The green bond proceeds will be expended in accordance with the budgetary laws of the Russian Federation and the City of Moscow, as well as the Russian Federation procurement regulation.

The following departments will be directly in charge of managing the projects specified in the Framework:

1. The Department of Transport and Road Infrastructure (the «Moscow bus fleet replacement with electric buses» project)
2. The Department of Construction, and the Department of Transport and Road Infrastructure (the «Expansion of the metro system» project).

The City of Moscow is responsible for:

- allocating 100 % equivalent to the green bond proceeds to the projects specified in the Framework;
- ensuring that the targets of the projects specified in the Framework are achieved;
- ensuring that the projects specified in the Framework are implemented in accordance with the environmental requirements and standards and that environmental risks are properly managed;
- ensuring that suppliers (contractors) are selected on a competitive basis in accordance with applicable laws;
- publishing the reports on the use of funds equivalent to the City of Moscow's green bond proceeds.

Reporting involves the preparation and approval of annual reports on the use of funds equivalent to the City of Moscow's green bond proceeds up until the green bond redemption and/or until the completion of the projects specified in the Framework.

Annual reports will contain the following information:

Information on the amount **of project financing**, including the City of Moscow's green bond proceeds equivalent and other sources

Information about **the expending** (allocation to the projects) of funds equivalent to the City of Moscow's green bond proceeds, including expending during the reporting period.

Information about **the management of unallocated green bond proceeds** (if any).

Information about **the achievement of qualitative and quantitative Project targets.**

Information **confirming the implementation of projects** and the actual use of green bond proceeds equivalent.

Information about the status of projects as **of the end date of the reporting period.**

4. ALIGNMENT WITH THE GREEN BOND PRINCIPLES

| 4.4. REPORTING

The Framework is subject to verification of its alignment with the ICMA Green Bond Principles and the VEB.RF Guidelines, to be carried out by an independent valuator recognized by the ICMA («Expert RA»).

Annual reports will be subject to verification by independent valuator recognized by the ICMA as well.

The Framework, annual reports, and respective independent reports will be published on the **«Moscow Open Budget»** website .[1]

[1] https://budget.mos.ru/