

Second-Opinion Report on the Alignment of the Government of Moscow's Series 74 Bonds with the Green Bond Principles and the Conformance of Projects Financed with Bond Proceeds to Internationally Accepted Environmental and Sustainable Finance Principles and Standards

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External Review of the Alignment of the Government of Moscow's Series 74 Bonds with the Green Bond Principles and the Conformance of Projects Financed with Bond Proceeds to Internationally Accepted Environmental and Sustainable Finance Principles and Standards .

Executive Summary

In accordance with its methodology for providing a second-party opinion on a bond issue alignment with the Green Bond Principles (GBP) promoted by the International Capital Market Association (ICMA), Expert RA confirms that Series 74 Bonds to be issued by the Government of Moscow are aligned with the GBP and the Guidelines for Sustainable Investing in the Russian Federation, developed by State Development Corporation VEB.RF (the "VEB.RF Guidelines").

The Bonds to be issued are fully aligned with the core components of the GBP regarding:

1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

Also, the Bonds to be issued meet the VEB.RF Guidelines criteria.

The Government of Moscow (the "Government of Moscow", the "Issuer", the "City") provided all information necessary for the external review. In the course of the review, Expert RA did not find any evidence of false representations in the provided materials.

Media Contacts

+7 (495) 225-34-44
(ext. 1706, 1650)
+7 (495) 225-23-54
(ext. 1706, 1650)
pr@raexpert.ru

Expert RA

13 building 2,
Nikoloyamskaya street,
Moscow

+7 (495) 225-34-44
+7 (495) 225-23-54
info@raexpert.ru

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The bond issue proposed by the Government of Moscow is intended to finance the City's green projects, including the bus fleet replacement with electric buses, and the metro system development. These projects are disclosed in the City of Moscow's Green Bond Framework published on the Issuer's website.

Key characteristics of the issue

Security type	Series 74 exchange-traded interest-bearing, non-convertible bonds settled on a book-entry basis through a CSD
Issue identification number	RU26074MOSO dated 27 th April 2021
Issue size	RUB 70 billion
Commencing date of placement	27 th May 2021
Maturity date	17 th May 2028

Opinion Rationale

Use of Proceeds

Since 2019, Moscow has been participating in the Organisation for Economic Cooperation and Development (OECD)'s "Territorial Approach to the Sustainable Development Goals" pilot project, which aims at monitoring the implementation of the 17 Sustainable Development Goals (SDGs) by different cities and regions, and analyzing a city's policy alignment with the UN Sustainable Development Agenda. In addition, the City is engaged in the Housing and Urban Environment national project. Moscow's environmental priorities are set out in the Moscow Government's Decree No. 394-PP "On the Basic Provisions of the City of Moscow's New Environmental Policy for the Period up to 2030" dated 10th July 2014, while the key development targets are specified in its System of Public Programmes. One of the eight key targets of Moscow's environmental policy is a qualitative transformation of the City's transport system to ensure good air quality, decrease noise pollution and reduce anthropogenic emissions. In 2012, Moscow adopted a new transport policy, which prioritizes the development of environmentally friendly public transport. Transport emissions in the city totalled 334,000 tonnes in 2019 (down 2.7x compared with 2010). The Issuer intends to use Bond proceeds to procure around 400 electric buses, construct 18 new metro stations and 43.8 km new metro lines, and reconstruct 3 stations and 4 km of lines related to the Big Circle Line. The electric buses' indirect emissions related to the generation of electricity for their recharge are relatively low, while per passenger indirect emissions related to the generation of electricity for the metro operation are approximately 200 times as low as per passenger emissions from motor vehicles. Project expenditures during the project implementation will match the green bond proceeds or exceed them.

In sum, the Issuer's projects are aimed at mitigating the effect of the climate change and reducing atmospheric air pollution and can therefore be viewed as being aligned with the internationally accepted environmental and sustainable finance principles and standards promoted by the International Capital Market Association (ICMA) (the "Green Bond Principles", the "GBP").

Expert RA confirms that the projects are aligned with the Green Bond Principles.

Project Evaluation and Selection

A Task Force, established in accordance with the Mayor of Moscow's order to arrange for and support the placement of the City of Moscow's bonds, is responsible for the achievement of the announced targets and appropriate use of the Bond proceeds. The Task Force is 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 Head of the Office Government of Moscow. The Task Force' mission includes the support of the green bond issuance, the development of recommendations on the list of projects to be financed with green bond proceeds, and the preparation of issue documents and reports on the use of the green bond proceeds. A tentative list of eligible projects was evaluated by responsible executive authorities of the City of Moscow. Projects were evaluated based on their importance from the viewpoint of the City of Moscow's environmental priorities, the alignment with the ICMA's Green Bond Principles and VEB.RF Guidelines, and other criteria. Overall, The Government of Moscow's process for selecting projects, and the Issuer's transparency at the pre-issuance stage are both aligned with the Green Bond Principles.

Management of Proceeds

The Task Force, established in accordance with the Mayor of Moscow's order, was in charge of arranging for and supporting the placement of the City of Moscow's bonds as part of its general mission to oversee the achievement of the announced targets and the use of the Bond proceeds. The Task Force' functions include the support of the green bond issuance, the development of recommendations on the list of projects to be financed with the Bond proceeds, and the preparation of issue documents and reports on the use of the Bond proceeds. The Issuer has declared that it will use 100% of Bond proceeds equivalent to finance the announced projects and properly account for the management of the proceeds. In addition, the City intends to keep records of project-related expenditures and monitor the matching of those expenditures and the Bond proceeds on an annual basis.

The City undertakes to deposit the balance of unallocated Bond proceeds in bank accounts (in accordance with the Moscow Government's Decree No. 594-PP «On approval of the Procedure for Placing temporarily free funds of the budget of the city of Moscow on bank deposits» dated 21st December 2011), if it finds it impossible to expend the equivalent of 100% Bond proceeds during the financial year, in which funds were raised, and hold those unallocated proceeds in bank deposits until expending them. The Bond proceeds will be expended in accordance with the budgetary laws of the Russian Federation and the City of Moscow, as well as the norms designed to ensure the selection of the suppliers of goods, works and services needed for project implementation on a competitive basis. The Government of Moscow's procedures stated above are in line with the Management of Proceeds component of the Green Bond Principles.

Reporting

The Issuer intends to allocate the equivalent of 100% Bond proceeds towards financing eligible projects and report the allocation. The City will report the allocation of Bond proceeds on an annual basis on its website used for publishing the City of Moscow's fiscal information up until the Bond redemption date and/or the completion of eligible projects. The reports will contain information about the use of all of the bond proceeds and the achievement of corresponding project performance targets.

Expert RA considers the City of Moscow's reporting procedures to be aligned with the Green Bond Principles.

Issuer Profile

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

The city's 12.6-million population tends to grow (in the past five years it increased by 300,000 residents).

Moscow's gross regional product (GRP) at year-end 2020 was estimated at RUB19 trillion. Moscow accounts for around one-fifth of gross value added generated by all Russian regions.

Moscow ranks high in some international rankings.

For example, in 2020, it

- was included in IQAir's World regional capital city ranking of capital cities, which meet the World Health Organization (WHO) requirements regarding ultrafine (class PM_{2.5}) particles concentration in the air¹.
- 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 sequestration².
- ranked 12th in the fDi's European City of the Future ranking³;
- ranked 17th in the InterNations' ranking of the world's best cities for expatriates (the Expat City Ranking)⁴

In 2021, Moscow:

- ranks 4th in the Resonance Consultancy's World' Best Cities ranking⁵;
- occupies the 22th position 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 promotion⁶.

Preliminary estimates of the 2020 performance suggest that Moscow was above OECD regions' average in areas related to four SDGs, 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).

Moscow has achieved several targets, including those related to general and youth employment, number of physicians per 1000 people, and number of patent applications per million population.

Furthermore, Moscow has outperformed an average OECD region in metrics such as the proportion of households with permanent internet access via broadband networks, road traffic death rate (per 100,000 population), and gender equality in terms of full- and part-time employment.

Alignment with the Green Bond Principles

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>

Use of Proceeds

Moscow's environmental priorities are set out in the Moscow Government's Decree No. 394-PP "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 City's System of Public Programmes.

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

- 1.** Prioritized conservation of biodiversity, natural ecosystems, landscapes and complexes.
- 2.** Recognition of the environment as a public health and well-being factor.
- 3.** Qualitative transformation of the City's transport system to ensure good air quality, decrease noise pollution and reduce anthropogenic emissions.
- 4.** A gradual shift to a low-carbon economy.
- 5.** Expansion of green space (parks, gardens, streetscapes, etc.) at the expense of undeveloped land and former industrial areas.
- 6.** Fundamental change in the balance of solid waste burial, incineration and recycling.
- 7.** Environmental transparency.
- 8.** Promotion of the residents' environmental culture.

The City's System of Public Programmes is aimed at implementing the above priorities with an emphasis on establishing a comfortable and safe urban environment.

Moscow's special focus is on target 2, which covers the upgrading of its transport system. One of the projects seeks to reduce road traffic emissions through the City's road system modernization by transforming its 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. Also, Moscow seeks to control traffic expansion through public transport development. The implementation of its transport policy 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

Contaminant	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 (PM _{2.5})	0.031	0.023	0.018	0.021	0.025	0.021	0.020	0.016

To continue with its transport policy, Moscow has identified several projects to be financed from prospective Bond proceeds.

Projects identified as eligible for financing

The City of Moscow bus fleet replacement with electric buses

Under this project, the City intends to procure around 400 electric buses through a bidding process. Indirect electric bus emissions from recharging (emissions related to the generation of electricity needed to recharge an electric bus) are approximately 30 kg/ year⁷. This is much less than emissions from one Euro-4 class bus and one Euro-5 ecological class bus (290.5 and 219 kg/ year, respectively). As of the beginning of 2021, the city operated around 600 electric buses on 44 routes, and had more than 100 charging stations.

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

- the replacement of one Euro-4 class and one Euro-5 class diesel bus with an electric bus will allow pollutant emissions decrease of 260.5 and 189 kg/ year, respectively;
- the replacement of one diesel bus with an electric bus will allow a CO₂ emissions decrease of 60.5 t/ year on average.

Expansion of the metro system

The construction of 18 metro stations and 43.8 km of lines and the reconstruction of 3 stations and 4 km of lines related the Big Circle Line is to be financed in 2021-2023 under this project.

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 ⁹	11	Zyuzino, Vorontsovskaya, Novatorskaya, Kashirskaya (reconstruction), Varshavskaya (reconstruction), Kakhovskaya (reconstruction)
Western	9	Narodnoe Opolchenie, Mnevniki, Terekhovo, Kuntsevskaya

The metro is currently the most popular public transport in Moscow, accounting for around 45% of the City's total passenger traffic. Considering 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 City's remote and central areas, and from the environmental impact perspective.

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.

⁷ Not counting emissions from diesel-powered passenger compartment heaters that may be used in the cold season, when temperatures are 5oC 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

⁸ The reconstruction includes infrastructure upgrading, 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.

Owing to the metro system expansion, Moscow residents increasingly abandon their cars, the result being decreased emissions of CO₂ and other pollutants. Furthermore, the introduction of new metro lines decreases noise pollution from road transport through the reduction of traffic flow intensity.

The completion of this project in 2023 will lead to an at least 10,000 reduction in the number of cars on the City's roads with the following environmental effect:

- a 885.5 tonne/ year decrease in pollutant emissions;
- a 20,900 tonne/ year decrease in CO₂ emissions⁹.

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

According to the Issuer, project documents provide for a number of measures to mitigate the impact of the metro construction on the components of the environment. They will include measures to protect atmospheric air and groundwater, reduce noise pollution and other "physical" impacts, and dispose of construction debris through recycling.

The assessment of the project construction work permissibility in the urban layout context proved that the project impact within protected zones was acceptable and that pollutant emissions from construction vehicles and equipment did not exceed permissible levels.

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

An automated waste accounting and control system, designed to efficiently handle construction debris and soils and arrange for their recycling, is already in place in Moscow. The construction debris 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.

Project expenditures during the project implementation will match the prospective Bond proceeds or exceed them.

It is therefore concluded that the Issuer's projects are aimed at mitigating the effect of the climate change and reducing atmospheric air pollution, which allows to view them as being aligned with the internationally accepted environmental and sustainable finance principles and standards promoted by the ICMA. Expert RA also confirms that the Bonds to be issued are in line with the VEB.RF's Guidelines for Sustainable Investing in the Russian Federation.

Expert RA confirms that the projects under review align with the Green Bond Principles.

⁹ If extraordinary force majeure circumstances occur preventing the commissioning of projected metro stations or sections, the City may allocate funds to other lines or stations, provided that the environmental effect of such allocation is not less than that projected.

Project Evaluation and Selection

The Task Force, established in accordance with the Mayor of Moscow's Order No. 663-RM dated 15th December 2020 to arrange for and support the issuance of the City of Moscow's bonds, is responsible for the achievement of the announced targets and appropriate use of the Bond proceeds. The Task Force is 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 Head of the Office Government of Moscow. The Task Force supports the green bond issuance, develops recommendations on the list of eligible projects, and prepares issue documents and reports on the use of the Bond proceeds.

The Task Force members represent:

- the Office of the Mayor and 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 has been involved, on a permanent basis, in the Task Force activities to resolve issues related to the selection of projects to be financed from the City's green bond proceeds, the assessment of their environmental effect, as well as the Framework development to resolve issues related to the issuance of bonds by the City of Moscow, the Task Force engaged the following departments representatives:

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

The Department of Economic Policy and Development has made up, at the Task Force's request, a tentative list of eligible projects that are consistent with relevant UN SDGs. The list includes both projects already in progress and those envisaged by the City. The projects were evaluated based on the following eligibility criteria:

- investment project alignment with ICMA's Green Bond Principles and VEB.RF recommendations;
- project importance from the perspective of the City of Moscow's environmental priorities and commitments;
- availability of an 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.

A final list of projects eligible for green bond proceeds was approved at the Task Force meeting on 28th January 2021.

It is concluded that the Issuer's Project Selection process and transparency at the pre-issuance stage are in line with the Green Bond Principles.

Management of Proceeds

The City of Moscow will fully use the equivalent of Bond proceeds to finance and/or refinance the announced projects and properly account for the management of the proceeds on an annual basis. In addition, the City will keep records of expenditures incurred in connection with the announced projects and monitor the matching of those expenditures and the Bond proceeds.

If there are unallocated Bond proceeds at the end of financial year, in which funds were raised, the City undertakes to deposit funds equivalent to the balance of unallocated Bond proceeds in bank accounts in accordance with the Moscow Government's Decree No. 594-PP dated 21st December 2011 "On the Procedure for Depositing Temporarily Free Funds of the Moscow City Budget in Banks". The deposit maturity will be selected such that there is no way to delay the financing of the eligible projects identified in the Framework.

The Bond proceeds will be expended in accordance with the budgetary laws of the Russian Federation and the City of Moscow, as well as the norms designed to ensure the selection of the suppliers of goods, works and services needed for project implementation on a competitive basis.

The following departments of the Government of Moscow will be directly in charge of managing the projects:

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 "Metro system expansion" project).

The above procedures appear to be in line with the Management of Proceeds component of the Green Bond Principles.

Reporting

The Issuer intends to allocate the equivalent of 100% Bond proceeds towards financing eligible projects and report the allocation properly. The City will report the allocation of Bond proceeds on an annual basis on the "Moscow's Open Budget" website (<https://budget.mos.ru>) up until the Bond redemption date and/or the completion of eligible projects. This will include information about the use of all of the bond proceeds and the achievement of corresponding project performance targets.

The annual reports will contain:

1. Information on the amount of project financing, including the equivalent of funds raised from the issue of green bonds of the City of Moscow.
2. Information about the allocation of Bond proceeds to the green projects specified in the Framework.
3. Information about the use of unallocated Bond proceeds (if any).
4. Information about the achievement of performance qualitative and quantitative Project targets.
5. Information confirming the implementation of projects and the actual use of the equivalent of the funds raised from the issue of green bonds of the City of Moscow.
6. Information about the status of projects as of the end date of the reporting period.

In sum, the City of Moscow's Reporting is in line with the Green Bond Principles.

Appendix

List of documents used to prepare the Second-Party opinion:

1. City of Moscow Green Bond Framework
<https://budget.mos.ru/budget/debt/govbonds>
<https://www.mos.ru/depr/documents/obligacii-moskvy>
2. The Moscow Government's Decree No. 513-PP dated 27th April 2021
«On approval of the seventy-fourth Issue of Bonds of the City of Moscow».
3. Order of the Mayor of Moscow dated 15th December 2020 No. 663-RM
«On the establishment of Task Force for the organization and support of the issue of Bonds of the City of Moscow»
4. Order of the Government of Moscow dated 23th April No. 269-RP
«On the City of Moscow Green Bond Framework»
5. Minutes of the Meeting of the Task Force in Charge of Arranging for and Supporting Green Bond Placement by the City of Moscow, dated 28th January 2021
6. 2019 Annual Report on the Progress of the Transport System Development Government Programme of the City of Moscow.
7. Changes in annual average contaminant concentrations near city roads in 2011-2020.
8. Assessment information about the reduction of pollutant emissions from motor vehicles following the construction of the South-Western, Southern, Eastern and North-Eastern sections of the Big Circular Line of the Moscow metro system.
9. Indirect metro-operation related emissions vs motor vehicle emissions.
10. Methodology for providing a second-party opinion on a bond issue alignment with the Green Bond Principles
<https://www.raexpert.ru/docbank//99d/119/686/6df2722b40751e2f8f659c8.pdf>
11. Green Bond Principles (GBP) of the International Capital Market Association (ICMA)
<https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Green-Bonds-Principles-June-2018-270520.pdf>
12. Guidelines for Sustainable Investing in the Russian Federation, developed by State Development Corporation VEB.RF
<https://veb.ru/files/?file=1cc7ffec701762260d130988dafca0cf.pdf>
13. Primary areas of Sustainable Project Implementation in the Russian Federation (systematized).
<https://veb.ru/files/?file=3c88641bf666e0d8b2609488ed24d511.pdf>