

Second-Party Opinion

The Société du Grand Paris Green Bond EMTN Programme Framework

Evaluation Summary

Sustainalytics is of the opinion that the Société du Grand Paris Green Bond EMTN¹ Programme Framework is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds – (i) Construction of new electric metro lines and line extensions and (ii) Construction and development of new stations and technical centres for electric metros are aligned with those recognized by the Green Bond Principles (clean transportation). Sustainalytics considers that the company’s Grand Paris Express project is expected to support urban densification and contribute to reverse urban sprawl in the Paris Metropolitan Area, all by assisting the long-term modal shift to public transportation and curb Ile-de-France’s CO₂ emissions.



PROJECT EVALUATION / SELECTION Société du Grand Paris’ project evaluation and selection is governed by a Green Bond Committee consisting of members of the Management Board along with the company’s Finance and Environmental Engineering and Economic Studies departments. This is aligned with market practice.



MANAGEMENT OF PROCEEDS Proceeds from the green bonds will be tracked by Société du Grand Paris’ Finance Department through its internal information systems and database. Pending full allocation, the unallocated green bond proceeds will be placed with the French Treasury and invested under its policies and guidelines. This process is aligned with market practices.



REPORTING Société du Grand Paris commits to provide allocation and impact reporting annually on the company’s website. The (i) allocation report will comprise the allocated amounts (in millions of Euros), the breakdown by Grand Paris Express (“GPE”) line (in millions of Euros) and the project status. With regards to the (ii) impact report, Société du Grand Paris will report on a comprehensive set of performance and impact indicators such as vehicle flows avoided (modal report) or estimated energy saving (kWh). Sustainalytics assesses the company’s reporting practices as market best practice due to their scope and level of granularity.

Evaluation date	September 2018
Issuer Location	Paris, France

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¹ Euro Medium-Term Notes

Introduction

Société du Grand Paris (“SGP” or “the company”) is a French state-owned company providing transportation and infrastructure construction services in the Paris Metropolitan Area. SGP was created by the Grand Paris Law of June 3, 2010, and it was tasked with designing and developing infrastructure projects for the public transport network of the Paris Metropolitan Area, with the aim to promote a sustainable, inclusive and job creating environment.

Société du Grand Paris has developed the Société du Grand Paris Green Bond EMTN Programme Framework (the “framework”) under which it is considering issuing green bonds, the proceeds from which will finance or refinance, in whole or in part, existing and future projects that improve mobility services and related-infrastructure. The framework defines eligibility criteria in two areas:

1. Construction of new lines and line extensions: almost 200 km of new automatic metro lines supplementing the 400 km of existing lines in the Ile-de-France region
2. Construction and development of new stations and technical centres: 68 stations and 7 technical centres planned

Société du Grand Paris engaged Sustainalytics to review the Société du Grand Paris Green Bond EMTN Programme Framework and provide a second-party opinion on the alignment of the green bond with the Green Bond Principles 2018 (the “GBP”), as administered by the International Capital Market Association (the “ICMA”),² and the framework’s environmental credentials. This framework has been published in a separate document.³

As part of this engagement, Sustainalytics held conversations with various members of SGP’s management team to understand the sustainability impact of their business processes and planned use of proceeds, as well as management of proceeds and reporting aspects of SGP’s green bond. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics’ opinion of the Société du Grand Paris Green Bond EMTN Programme Framework and should be read in conjunction with that framework.

² ICMA’s Green Bond Principles 2018 <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

³ <https://www.societedugrandparis.fr/sgp/investors>

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Société du Grand Paris EMTN Green Bond EMTN Programme Framework

Summary

Sustainalytics is of the opinion that the Société du Grand Paris Green Bond EMTN Programme Framework is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018. Sustainalytics highlights the following elements of SGP's green bond framework:

Use of Proceeds:

- The use of proceeds categories of the Société du Grand Paris Green Bond EMTN Programme Framework – (i) Construction of new lines and line extensions and (ii) Construction and development of new stations and technical centres – are recognized as impactful by the GBP 2018. Sustainalytics believes SGP's Grand Paris Express projects contribute to reduce the Paris Metropolitan Area's carbon footprint through enhancing the densification of the Ile de France region, mitigating against urban sprawl and unsustainable land artificialization, while also facilitating the long-term modal shift to public transportation. Société du Grand Paris confirmed that all the metros will be electric, while the supporting infrastructure (new stations and technical centres) will be dedicated solely to the electric metros. Of note, SGP uses CarbOptimum,⁴ a carbon calculator, to support efforts to limit lifecycle GHG emissions from the project.
- SGP's look-back period for refinancing activities is 24 months, which is aligned with market practice.

Project Selection and Evaluation Process:

- SGP confirmed that the project selection and evaluation process will be executed by a Green Bond Committee comprising members of the Management Board and Finance Department, along with representatives from the Environmental Engineering and Economic Studies Department.
- SGP also confirmed that the project owner will conduct an environmental impact study for each section of the Grand Paris Express project, which will be assessed by the French General Council for the Environment and Sustainable Development, the governmental authority in charge of approving implementation of the project. Sustainalytics assesses this process as a strong practice.

Management of Proceeds:

- Sustainalytics assesses SGP's management of proceeds process to be aligned with market practices. The company's Finance Department will track green bond allocations through its internal information systems and databases. The unallocated proceeds will be deposited with the French Treasury and invested in accordance with its policies and guidelines.

Reporting:

- SGP will publish an annual allocation and impact report on its website.⁵
- The (i) allocation report will comprise relevant transaction information such as: the allocated amounts (in millions of Euros), the breakdown of allocated amounts per Grand Paris Express line (in millions of Euros) and the status of the project. The (ii) impact report will provide a comprehensive set of performance and impact indicators, including vehicle flows avoided (modal report) or estimated energy savings (in kWh). For the full impact reporting criteria, please see Appendix 1.
- In the year following the issuance, SGP will also provide investors with a third-party assurance of the allocation of proceeds and SGP's reporting. Sustainalytics assesses SGP's reporting commitments to be market best practice due to the level of detail and scope of its allocation and impact coverage.

⁴ Overview of CarbOptimum available at: <https://www.societedugrandparis.fr/gpe/actualite/carboptimumr-le-calculateur-carbone-de-la-sgp-815>

⁵ The allocation and impact report will be made available here: <https://www.societedugrandparis.fr/sgp/investors>

Alignment with Green Bond Principles 2018

Sustainalytics has determined that the Société du Grand Paris Green Bond EMTN Programme Framework aligns with the four core components of the Green Bond Principles 2018. For detailed information please refer to Appendix 4: Green Bond/Green Bond Programme External Review Form.

Section 2: Sustainability Strategy of the Issuer

Contribution of framework to issuer's sustainability strategy and mandate

In July of 2017 the Government of France, which owns 100% Société du Grand Paris, introduced its Climate Plan, highlighting the country's ambition to achieve carbon neutrality by 2050.⁶ As part of its Climate Plan, France has established a comprehensive set of emissions targets and has outlined a supporting policy framework to achieve a low carbon future.⁷ A major area of focus in the Climate Plan is the goal of "making clean transport accessible to all, and developing innovation." It should be noted that while the government plan focuses on the automotive sector, Sustainalytics views the expansion of low carbon mass transit as an important alternative to the automobile.

In line with the French Government's sustainability goals, Société du Grand Paris received the mission to design and implement the Grand Paris Express⁸, a cluster of new rapid transit lines in the Ile-de-France region and the Paris Metropolitan Area, with the purpose to ensure better commuter service, stimulate regional development and innovation. In this sense, Société du Grand Paris has also outlined seven environmental commitments to guide its actions in the development of the express system.⁹ The commitments are:

1. Avoid, reduce or offset environmental impacts
2. Foster energy efficiency
3. Integrate all structures in their environmental, architectural or landscape context
4. Anticipate natural risks
5. Foster soft mobility options
6. Conduct eco-responsible worksites
7. Develop the circular economy

Furthermore, the fundamental mission of the issuer is to develop a mass public transportation network that seeks to promote sustainable economic development and job creation in the Ile-de-France region.¹⁰ This purpose is enshrined in the French Law June 3rd, 2010 that prompted the creation of the issuer.¹¹ As such, Sustainalytics views the Société du Grand Paris' central purpose as sustainable and impactful.

Sustainalytics believes that the Société du Grand Paris Green Bond EMTN Programme Framework is consistent with the overall climate ambitions of the Government of France, the law under which the Société du Grand Paris was established and the fundamental mission of the issuer, which is considered impactful by the Green Bond Principles 2018. Finally, Société du Grand Paris demonstrates a strong commitment to supporting the deployment of responsible finance in France and is the first French issuer with a 100% EMTN Programme dedicated to innovative sustainable urban and mobility solutions.

Well positioned to address common environmental and social risks associated with the projects

Sustainalytics recognizes that the development of new public transit lines, extensions of existing lines and the construction of new metro centers and technical centers for maintenance entails social and environmental risks. SGP estimates that around 300 working sites will be opened during the lifetime of the GPE project. Sustainalytics recognizes that the GPE project may be associated with worker health and safety risks, site waste management risks and potential environmental damage risks resulting from the construction of

⁶ Government of France Climate Plan available at: <https://www.gouvernement.fr/en/climate-plan>

⁷ Government of France Climate Plan available at: <https://www.gouvernement.fr/en/climate-plan>

⁸ More information the Grand Paris Express project available at: <https://www.societedugrandparis.fr/info/grand-paris-express-largest-transport-project-europe-1061>

⁹ <https://www.societedugrandparis.fr/sgp/engagements/environnement-184>

¹⁰ Law n° 2010-597 of June 3rd, 2010 relating to Greater Paris (1)

¹¹ Law n° 2010-597 of June 3rd, 2010 relating to Greater Paris (1)

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infrastructure. Société du Grand Paris has committed to mitigate these risks through the following requirements and processes:

- Undertaking environmental impact studies for each section of new lines and line extensions. The issuer must also obtain authorizations for work based on compliance with France's Environment and Forest codes, which specify the necessary precautions to be taken with regards to water, land clearance and protected species. SGP disclosed that since 2010, the company executed more than 5000 geo-technical and hydrological surveys over 600 km² along with a strategic environmental evaluation covering all relevant aspects such as: fauna and flora, agriculture, air and energy, noise impact, architectural and landscape heritage;¹²
- Complementing its sustainability-related risk mitigation practices, SGP implemented an internal policy and a management system called Quality-Security-Environment (Qualité-Sécurité-Environment) based on a continuous improvement model and sustainable development;
- Confirming its sustainability approach, SGP ensured that all its maintenance sites are certified under the HQE (Haute Qualité Environnementale) Standard for green building;
- SGP commits to comprehensive worker health and safety coverage and signed a CSR Charter along with project partner companies RATP (Régie Autonome de Transport de Paris), SNCF Réseau and the regional prefecture;
- Implementing a circular approach to waste management through which more than 45 million tonnes of construction waste are expected to be treated.¹³ In this sense, SGP and its contractors have a target to recover 70% of the construction waste generated, in line with France's Energy Transition Law¹⁴; SGP also ensured that its construction subcontractors implemented an innovative and risk-free approach to waste management such as pre-excavation land pollution diagnosis, the use of sealed wagons for soil transportation, waste conversion into ecological concrete, the use of clean excavated soils for the extension of new fertile lands or the use of excavated land to stabilize neglected mines.¹⁵ SGP implements an extended environmental responsibility approach through its network of partners and requires all construction subcontractors to sign an Environmental and Sanitary Record Card on the environmental quality of the construction materials used;¹⁶
- Implementing an overarching internal environmental protection policy built upon 10 pillars: adaptation of site work periods depending on the nesting seasons, prioritization of recycled materials, the preservation of animal species close to the Grand Paris Express lines, soil and water protection, water and energy consumption control, limitation of GHG emissions, nuisances, vibrations and dust and particulate emissions. Moreover, in order to compensate for any negative impacts, SGP commits to a compensation policy comprising reforestation and biodiversity enhancement initiatives;¹⁷
- Targeting workers' health and safety risks, SGP confirmed that all parties (including subcontractors) involved during the entire life cycle of the construction process are legally bound to respect a Site Security Charter (Charte et Référentiels Sécurité) in addition to following all health and safety regulation in France.¹⁸

The construction of the Grand Paris Express is also expected to result in GHG emissions. In order to mitigate project related emissions, Société du Grand Paris is using a purpose-built tool, CarbOptimum, to gain visibility into the emission profile of the project and identify opportunities for reductions. It is anticipated that the utilization of this tool will aid in mitigating direct GHG emissions associated with the development of new transport lines, expansion of existing lines and construction of new stations and technical centres.

¹² More information on Société du Grand Paris environmental protection practices available at: https://media-mediathèque.societedugrandparis.fr/permalinks/domain1/2017/09/19/455-Les_fondamentaux_des_chantiers_du_Grand_Paris_Express_Proteger_l_environnement_et_valoriser.pdf

¹³ More information on the waste management practices for Grand Paris Express available here: https://media-mediathèque.societedugrandparis.fr/permalinks/domain1/2018/03/19/729-Dossier_gestion_et_valorisation_des_deblais.pdf

¹⁴ France's Energy Transition Law available here: <http://www.unepfi.org/fileadmin/documents/PRI-FrenchEnergyTransitionLaw.pdf>

¹⁵ More information on SGP's innovative approach to waste management at: <https://www.societedugrandparis.fr/gpe/actualite/des-solutions-innovantes-pour-les-deblais-du-grand-paris-express-472>

¹⁶ More information on SGP's environmental responsibility approach available at: https://media-mediathèque.societedugrandparis.fr/permalinks/domain1/2017/09/19/455-Les_fondamentaux_des_chantiers_du_Grand_Paris_Express_Proteger_l_environnement_et_valoriser.pdf

¹⁷ More information SGP's environmental protection policy available at: https://media-mediathèque.societedugrandparis.fr/permalinks/domain1/2017/09/19/455-Les_fondamentaux_des_chantiers_du_Grand_Paris_Express_Proteger_l_environnement_et_valoriser.pdf

¹⁸ More on the health and safety regulations in France available at: <http://travail-emploi.gouv.fr/sante-au-travail/>

Section 3: Impact of Use of Proceeds

Contribution towards decarbonized regional development in the Ile de France Region

The Ile-de-France Region, incorporating Paris and the Paris Metropolitan Area, brings together more than 12 million inhabitants with a total carbon footprint of 38.5 million tonnes of CO_{2e} (including transport, agriculture, residential, construction, waste and agriculture emissions) in France's largest urban area.^{19,20} With almost 60% of Ile-de-France's GHG emissions, the transportation sector plays a critical role in the regional development and Ile de France's carbon footprint profile mostly due to urban sprawl and an associated reliance on automobile transportation.²¹ Studies have indicated that urban sprawl intensifies GHG emission concentration, especially in the Paris Metropolitan Area, with 1000 kg in CO₂ emissions compared to an average of 640 kg for the French territory.²²

Société du Grand Paris commissioned a third-party company to evaluate the carbon impact of the Grand Paris Express project which is expected to result in 27 million tonnes of CO_{2e} reduction due to the modal shift from road to rail transportation, as well as the urban renewal and regional development prompted by the new metro system. Sustainalytics assessed the CarbOptimum tool used for the calculation, which is available in Appendix 2, while the CO₂ emission reduction patterns are available in Appendix 3. CarbOptimum indicates that the majority of the cumulative GHG emission reductions, approximately two thirds, are attributable to the regional development induced by the Grand Paris Express project. Specifically, the impact is attributable to reducing urban sprawl and the associated reductions in land artificialisation and reduced requirements for connecting infrastructure. Moreover, Sustainalytics highlights that SGP used an integrated approach towards a life-cycle CO₂ emission control through the use of the CarbOptimum tool, which indicates a comprehensive approach to mitigating CO₂ emission during all construction phases: use of materials, technologies, equipment and energy.

Sustainalytics holds a positive view over the construction and implementation of the Grand Paris Express project and considers that the expected carbon reductions will support France and the City of Paris to achieve their decarbonization targets. While France exceeded its national target of reducing GHG emissions by 14% in 2016 compared to 2005 levels, it is still above its EU 2020 target by approximately 5%.²³ The project is considered even more impactful in light of the fact that France is amongst the highest producers of GHG emissions from transport in the EU.²⁴ While France has a climate goal to reach a 40% emission reduction by 2030, and 75% by 2050, compared to the 1990 levels, the City of Paris committed to carbon neutrality by 2050.²⁵

Contribution towards dense and sustainable urbanization

As the Grand Paris Express lines are expected to run at 55% km/h on average speed and have 2 to 3 minutes in scheduled waiting time (SWT)²⁶, Sustainalytics views the project as a robust substitute for automobile use which would support the densification of the Metropolitan Paris Area and reverse the urban sprawl. SGP's projections showed that GPE will accommodate more than two million travellers daily²⁷, thus contributing to a more productive use of the urban space and support a sustainable urban densification detached from carbon intensive individual transport methods. In this sense, Sustainalytics highlights that the urban

¹⁹ More information on the carbon footprint of the Ile de France Region available at: https://www.iau-idf.fr/fileadmin/NewEtudes/Etude_174/pdf_bilan_carbone_ia_48947.pdf

²⁰ The list of France's largest urban areas available at: <https://www.insee.fr/fr/statistiques/2569312?sommaire=2587886>

²¹ Study from France's General Commissariat for Sustainable Development available at: http://www.statistiques.developpement-durable.gouv.fr/fileadmin/documents/Produits_editoriaux/Publications/La_revue_du_CGDD/2012/Revue%20CGDD%20%C3%A9talement%20urbain_%20mars%202012_V2.pdf

²² Study available at: http://www.statistiques.developpement-durable.gouv.fr/fileadmin/documents/Produits_editoriaux/Publications/La_revue_du_CGDD/2012/Revue%20CGDD%20%C3%A9talement%20urbain_%20mars%202012_V2.pdf

²³ Europe 2020 targets: statistics and indicators for France; https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-your-country/france/europe-2020-targets-statistics-and-indicators-france_en

²⁴ Annual greenhouse gas emissions from fuel combustion in the transport sector in France from 2005 to 2014 (in million tons of CO₂ equivalent); <https://www.statista.com/statistics/411876/annual-greenhouse-gas-emissions-of-the-transport-sector-in-france/>

²⁵ Paris Climate Action Plan

²⁶ More details available at: https://media-mediathèque.societedugrandparis.fr/permalinks/domain1/2017/09/19/455-Les_fondamentaux_des_chantiers_du_Grand_Paris_Express_Proteger_l_environnement_et_valoriser.pdf

²⁷ More details available at: https://media-mediathèque.societedugrandparis.fr/permalinks/domain1/2017/09/19/455-Les_fondamentaux_des_chantiers_du_Grand_Paris_Express_Proteger_l_environnement_et_valoriser.pdf

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densification will reduce the need for connecting infrastructures such as roads and utilities, thus maintaining a low-carbon regional development profile and contributing to curb the competition for urban space.

Similarly, the French National Institute of Statistics and Economic Studies (Insee) projects that the number of residents in the Paris Metropolitan Area will increase moderately from 11.9 million in 2018 to 13.5 million in 2050²⁸, while the number of people aged over 60 will exceed 25% of the entire population.²⁹ In this sense, Sustainalytics considers that the Grand Paris Express project will positively contribute to optimise and intensify exchanges for all group ages, thus acting as a support for enhanced social integration.

Social Impact of the Grand Paris Express

SGP confirmed that more than 20% of the construction work related to Grand Paris Express will be performed by French local SMEs, with at least 5% of the working hours being dedicated to those holding long-term unemployed status. Sustainalytics holds a positive view of SGP's contribution to community employment and views it as a robust complement to France's efforts to support local SMEs³⁰ and long-term employment.³¹

Separately, as at least 30% of the residents in the City of Paris currently live 75 metres or closer from a highly congested road corridor³², the local administration implemented a series of measures stimulating clean mobility, which have rendered a reduction of 39% in the GHG emissions, 30% less automobile traffic and 23% reduction in road transport related emissions.³³ In this sense, Sustainalytics considers that the Grand Paris Express project will provide a strong framework for further air emissions reductions, thus positively contributing to the City of Paris air quality and related public health measures.

Alignment with/contribution to SDGs

The Sustainable Development Goals (SDGs) were set in September 2015 and form an agenda for achieving sustainable development by the year 2030. This green bond advances the following SDG goals and targets:

Use of Proceeds Category	SDG	SDG target
(1) Construction of new lines and line extensions and (2) Construction and development of new stations and technical centres	SDG 11 Sustainable Cities and Communities	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older person 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
(1) Construction of new lines and line extensions and (2) Construction and development of new stations and technical centres	SDG 13 Climate Action	13.2 Integrate climate change measures into national policies, strategies and planning

²⁸ More information on the Insee studies available at: <https://www.insee.fr/fr/statistiques/3201222>

²⁹ Population growth projections for the Paris Metropolitan Area available at: <https://www.insee.fr/fr/statistiques/3201222>

³⁰ More information on the French government's support of SMEs through BPI France available at: <https://www.gouvernement.fr/action/le-soutien-au-financement-des-pme-et-eti>

³¹ More information on the French government's long-term employment support available at: <http://poem.travail-emploi.gouv.fr/>

³² Healthcare and Environment Policy by the City of Paris available at: <https://api-site-cdn.paris.fr/images/81586>

³³ More information from the Paris Climate Agency available at: <http://www.apc-paris.com/actualite/paris-ville-engagee-pour-mobilite-durable>

Conclusion

Société du Grand Paris has developed a Green Bond Framework under which it intends to issue green bonds and use the proceeds to finance or refinance Eligible Assets related to (i) the construction of new electric metro lines and line extensions, and (ii) the construction and development of new stations and technical centres for electric metros, both of which are part of the Grand Paris Express project in the Paris Metropolitan Area.

Sustainalytics considers financing of the Grand Paris Express electrified metro lines to be aligned with green bond market expectations, supporting France's and the City of Paris' climate commitments. Sustainalytics views that the urban renewal shaped around the cluster of metro lines will prompt an immediate modal shift from high-carbon individual transport to low-carbon mass-transit and a long-term contribution to a more productive use of the public space. Sustainalytics views positively the Grand Paris Express project and is of the opinion that it will contribute to the sustainable densification of the Metropolitan Paris Area through the reduction of connecting infrastructure requirements, as well as to contribute to reverse urban sprawling tendencies.

Separately, Sustainalytics views positively Société du Grand Paris' environmental and social risk mitigation practices such as: (i) the use of the CarbOptimum tool to better mitigate project-related emissions; (ii) its comprehensive environmental studies and authorizations received from relevant authorities in line with the country's Environment and Forest Codes; and (iii) its circular approach to the management of construction waste and the above-mentioned innovative technologies used by the SGP's subcontractors.

Based on the above, Sustainalytics considers that Société du Grand Paris is well positioned to issue green bonds and the Société du Grand Paris Green Bond EMTN Programme Framework is transparent, credible, robust, and in alignment with the four components of the Green Bond Principles 2018.

Appendices

Appendix 1 : Société du Grand Paris reporting commitments

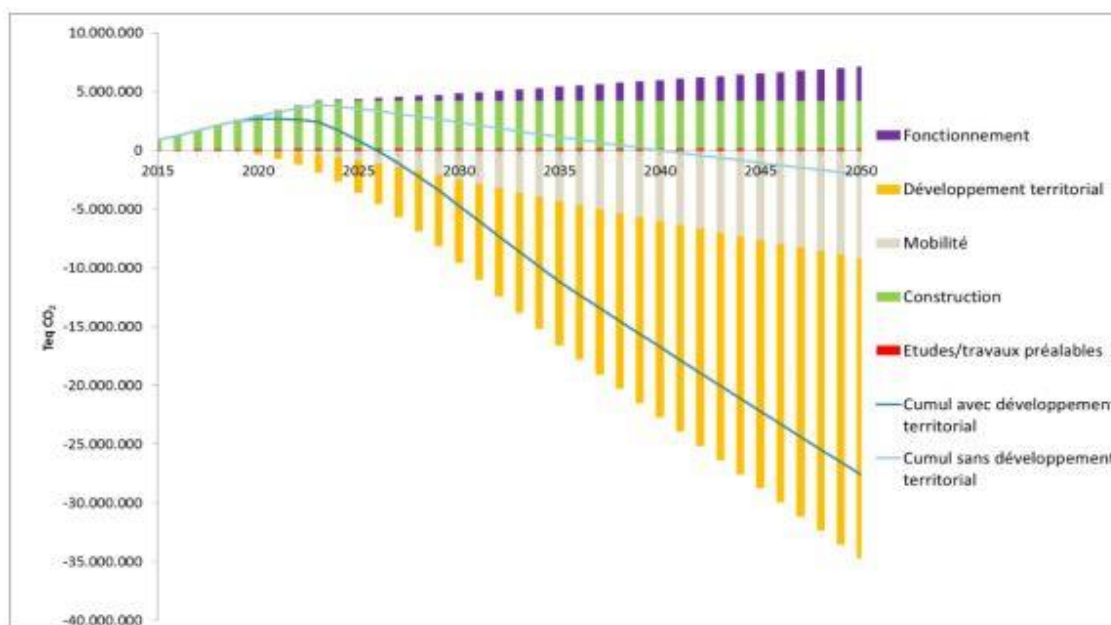
Category	Project category	Performance and impact indicators	
		Performance indicators	Impact indicators
Public transport	Grand Paris Express infrastructure and programme management investments	Number of additional people served --- Number of additional rail networks brought into service --- Vehicle flows avoided (modal report) --- Excavated material recovery rate --- Quantity of excavated materials evacuated other than by road --- Estimated gains in travel time (minutes/defined itinerary)	Ex-ante estimate of GHG reductions (tCO ₂ eq./year) ⁷ --- Estimated energy savings (KWh) --- Number of jobs created or supported in construction phase --- Number of housing units created around the stations

Appendix 2: Assessment of the CarbOptimum tool

CarbOptimum methodology	<p>Purpose:</p> <ul style="list-style-type: none"> to have a good overview of the GHG emissions resulting from the Grand Paris Express project to evaluate the overall positive impact of the project <p>GHGs taken into account:</p> <ul style="list-style-type: none"> CO₂, CH₄, N₂O, CnHmFp, CnF2n+2, SF₆ Stratospheric water vapor, NO_x and volatile organic compounds will be taken into account wherever feasible The influence of various GHGs is benchmarked against their Global Warming Potential (GWP) – a ratio between the thermal forcing over a given number of years prompted by the gas and the same size over 1 kg of CO₂ CO₂ was chosen by default as a reference GHG for standardization The methodology was built upon a GWP₍₁₀₀₎ in order to compare the impact of the gas benchmarked against one kg of CO₂ over a period of 100 years <p>GHG lifetime and GWP₍₁₀₀₎ below:</p> <table border="1"> <thead> <tr> <th>Nom</th> <th>Formule chimique</th> <th>Durée de vie (années)</th> <th>Efficacité radiative (W m⁻² ppb⁻¹)</th> <th>PRG₍₁₀₀₎</th> </tr> </thead> <tbody> <tr> <td>Dioxyde de carbone</td> <td>CO₂</td> <td>-</td> <td>1.4 x 10⁻⁵</td> <td>1</td> </tr> <tr> <td>Méthane</td> <td>CH₄</td> <td>12</td> <td>3.7 x 10⁻⁴</td> <td>25</td> </tr> <tr> <td>Oxyde nitreux</td> <td>N₂O</td> <td>114</td> <td>3.03 x 10⁻³</td> <td>298</td> </tr> <tr> <td>CFC-12</td> <td>CCl₂F₂</td> <td>100</td> <td>0.32</td> <td>10 900</td> </tr> <tr> <td>HCFC-22</td> <td>CHClF₂</td> <td>12</td> <td>0.2</td> <td>1810</td> </tr> <tr> <td>---</td> <td>---</td> <td>---</td> <td>---</td> <td>---</td> </tr> </tbody> </table>	Nom	Formule chimique	Durée de vie (années)	Efficacité radiative (W m ⁻² ppb ⁻¹)	PRG ₍₁₀₀₎	Dioxyde de carbone	CO ₂	-	1.4 x 10 ⁻⁵	1	Méthane	CH ₄	12	3.7 x 10 ⁻⁴	25	Oxyde nitreux	N ₂ O	114	3.03 x 10 ⁻³	298	CFC-12	CCl ₂ F ₂	100	0.32	10 900	HCFC-22	CHClF ₂	12	0.2	1810	---	---	---	---	---
Nom	Formule chimique	Durée de vie (années)	Efficacité radiative (W m ⁻² ppb ⁻¹)	PRG ₍₁₀₀₎																																
Dioxyde de carbone	CO ₂	-	1.4 x 10 ⁻⁵	1																																
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	<p>In order to estimate the emissions corresponding to one activity, the CarbOptimum tool uses the emission factors listed above times the activity emissions, as listed below:</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;"> $Données\ de\ l'activité \times\ Facteur\ d'émissions = Emissions\ de\ GES$ </div>
Sustainalytics' view	<p>Sustainalytics considers that the CarbOptimum tool adequately considers relevant greenhouse gases, their global warming potential and their equivalency to CO₂ emissions. Sustainalytics views that the CarbOptimum provides a strong framework for GHG emissions evaluation along all stages of the construction of the Grand Paris Express project.</p>

Appendix 3: CO₂ emission reduction patterns attributable to the Grand Paris Express



Appendix 4: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

Issuer name:	Société du Grand Paris
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable: <i>[specify as appropriate]</i>	The Société du Grand Paris Green Bond EMTN Programme Framework
Review provider's name:	Sustainalytics
Completion date of this form:	September 2018
Publication date of review publication: <i>[where appropriate, specify if it is an update and add reference to earlier relevant review]</i>	September 2018

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBPs:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW (*if applicable*)

Please refer to Executive Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section (*if applicable*):

The use of proceeds categories of the Société du Grand Paris Green Bond EMTN Programme Framework – (i) Construction of new lines and line extensions and (ii) Construction and development of new stations and technical centres– are recognized as impactful by the GBP 2018. Sustainalytics believes SGP's Grand Paris Express projects contribute to reducing the Paris Metropolitan Area's carbon footprint through enhancing the densification of the Ile de France region, mitigating against urban sprawl and unsustainable land artificialization, while also facilitating the long-term modal shift to public transportation. Société du Grand Paris confirmed that all the metros will be electric, while the supporting infrastructure (new stations and technical centres) will be dedicated solely to the electric metros.

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Use of proceeds categories as per GBP:

- | | |
|--|--|
| <input type="checkbox"/> Renewable energy | <input type="checkbox"/> Energy efficiency |
| <input checked="" type="checkbox"/> Pollution prevention and control | <input type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input checked="" type="checkbox"/> Clean transportation |
| <input type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBPs | <input type="checkbox"/> Other (<i>please specify</i>): |

If applicable please specify the environmental taxonomy, if other than GBPs:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (if applicable):

SGP confirmed that the project selection and evaluation process will be executed by a Green Bond Committee comprising members of the Management Board and Finance Department, along with representatives from the Environmental Engineering and Economic Studies Department. Moreover, SGP also confirmed that the project owner will conduct an environmental impact study for each section of the Grand Paris Express project, which will be assessed by the French General Council for the Environment and Sustainable Development, the governmental authority in charge of approving the implementation of the projects. Sustainalytics assesses this process as a strong practice.

Evaluation and selection

- | | |
|--|---|
| <input checked="" type="checkbox"/> Credentials on the issuer's environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input checked="" type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other (<i>please specify</i>): |

Information on Responsibilities and Accountability

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- | | |
|---|--|
| <input type="checkbox"/> Evaluation / Selection criteria subject to external advice or verification | <input type="checkbox"/> In-house assessment |
| <input type="checkbox"/> Other (please specify): | |

3. MANAGEMENT OF PROCEEDS

Overall comment on section *(if applicable)*:

Sustainalytics assesses SGP's management of proceeds process to be aligned with market practices. The company's Finance Department will track green bond allocation through its internal information systems and databases. The unallocated proceeds will be deposited with the French Treasury and invested under the latter's policies and guidelines.

Tracking of proceeds:

- Green Bond proceeds segregated or tracked by the issuer in an appropriate manner
- Disclosure of intended types of temporary investment instruments for unallocated proceeds
- Other *(please specify)*:

Additional disclosure:

- | | |
|--|--|
| <input type="checkbox"/> Allocations to future investments only | <input type="checkbox"/> Allocations to both existing and future investments |
| <input type="checkbox"/> Allocation to individual disbursements | <input type="checkbox"/> Allocation to a portfolio of disbursements |
| <input type="checkbox"/> Disclosure of portfolio balance of unallocated proceeds | <input type="checkbox"/> Other <i>(please specify)</i> : |

4. REPORTING

Overall comment on section *(if applicable)*:

SGP will publish an annual allocation and impact report on its website.³⁴ The allocation report will comprise relevant transaction information such as: the allocated amounts (in millions of Euros), the breakdown of allocated amounts per Grand Paris Express line (in millions of Euros) and the status of the project. The impact report will provide a comprehensive set of performance and impact indicators, including vehicle flows avoided (modal report) or estimated energy savings (in kWh). For the full impact reporting criteria, please check Appendix 1. In the year following the issuance, SGP will also provide investors with a third-party assurance of the allocation of proceeds and SGP's reporting. Sustainalytics assesses SGP's reporting commitments to be market best practice due to the level of detail and scope of its allocation and impact coverage.

³⁴ The allocation and impact report will be made available here: <https://www.societedugrandparis.fr/sgp/investors>

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Use of proceeds reporting:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Project-by-project | <input type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (<i>please specify</i>): |

Information reported:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Allocated amounts | <input type="checkbox"/> Green Bond financed share of total investment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Frequency:

- | | |
|---|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Impact reporting:

- | | |
|--|--|
| <input type="checkbox"/> Project-by-project | <input checked="" type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (<i>please specify</i>): |

Frequency:

- | | |
|---|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Information reported (expected or ex-post):

- | | |
|---|---|
| <input checked="" type="checkbox"/> GHG Emissions / Savings | <input checked="" type="checkbox"/> Energy Savings |
| <input type="checkbox"/> Decrease in water use | <input type="checkbox"/> Other ESG indicators (<i>please specify</i>): number of additional people served, number of additional rail networks brought into service, vehicle flows avoided (modal report), excavated material recovery rate, quantity of excavated materials evacuated other than by the road, estimated gains in travel time (minutes/defined itinerary), number of jobs created or supported in construction phase, number or housing units created around the stations. |

Means of Disclosure

The Société du Grand Paris Green Bond EMTN Programme Framework

- | | |
|---|---|
| <input type="checkbox"/> Information published in financial report | <input type="checkbox"/> Information published in sustainability report |
| <input type="checkbox"/> Information published in ad hoc documents | <input type="checkbox"/> Other (please specify): website: https://www.societedugrandparis.fr/sgp/investors |
| <input type="checkbox"/> Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review): | |

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

<https://www.societedugrandparis.fr/>
<https://www.societedugrandparis.fr/sgp/investors>

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- | | |
|--|--|
| <input type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification / Audit | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. Second Party Opinion: An institution with environmental expertise, that is independent from the issuer may issue a Second Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. Verification: An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. Certification: An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognized external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. Green Bond Scoring/Rating: An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialized research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

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Sustainalytics

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For more information, visit www.sustainalytics.com

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