RATP GREEN BOND

IMPACT REPORT

JUNE 2024

RATP GROUP

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World's third-largest urban transport operator

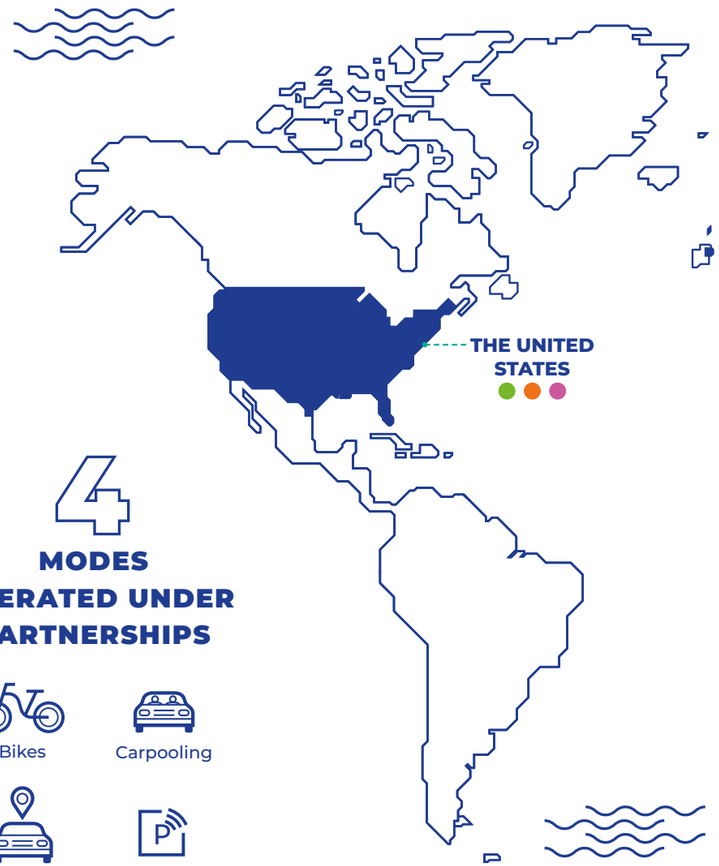
Operating 9 transport modes in 15 countries over 5 continents, RATP Group is a major name in urban mobility. This multi-modal expertise has allowed the Group to provide solutions adapted to the cities and regions that it assists in making the transition to decarbonised, innovative and inclusive mobility. Our teams commit every day to developing, operating, maintaining and upgrading public transport systems to ensure that service quality lives up to the expectations of transport authorities and passengers.

Our driving purpose: dedicating every day to better city living.

9

TRANSPORT MODES OPERATED

- Rail
- Metros
- Trams
- Urban and intercity buses
- Sightseeing buses
- Demand-responsive transport
- Ropeways
- Maritime shuttles
- Autonomous vehicles



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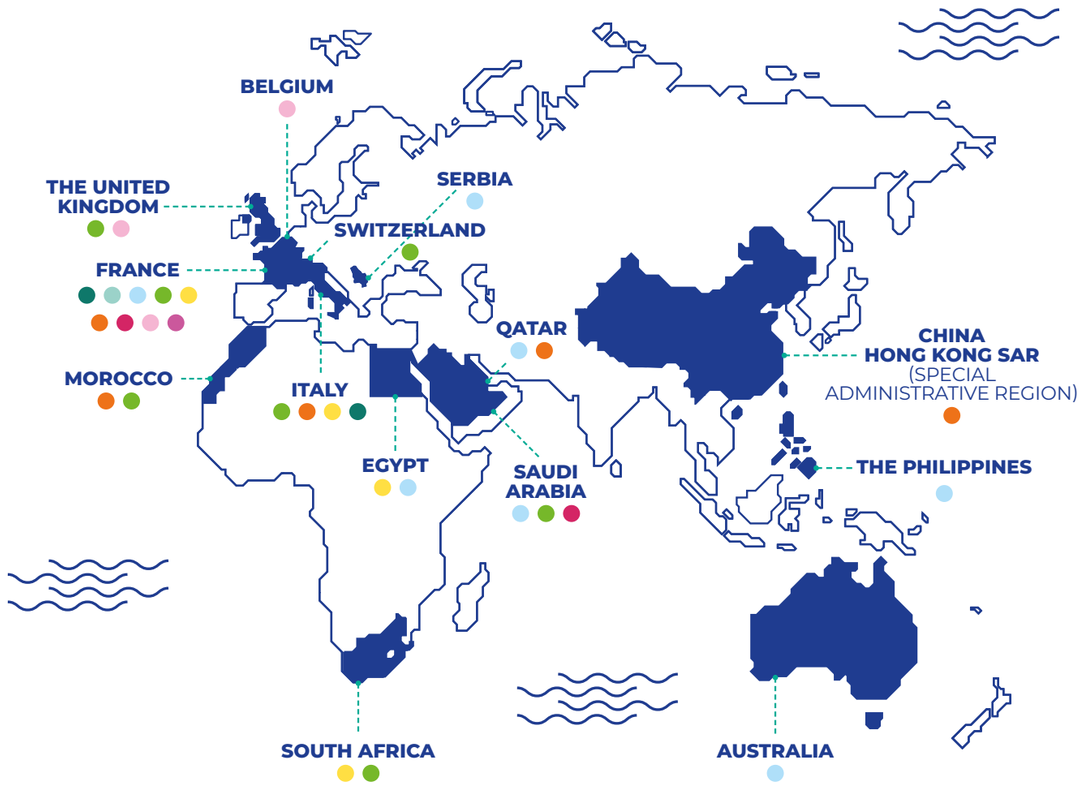
MODES OPERATED UNDER PARTNERSHIPS

- Bikes
- Carpooling
- Car sharing
- Smart car parks



Business model

RATP Group conducts its business in the mobility, urban services and infrastructure management sectors. Every day, the Group ensures its passengers' safety and provides additional services (ticketing systems, retail space management in transport facilities, lifts and escalator maintenance, to name a few). Its business model relies on a wide range of expertise and a broad network of stakeholders.

MOBILITY

€5.207 billion **in consolidated revenue**

Resources

Île-de-France Mobilités (transport authority)
Operating and investment earnings, contractual incentives (bonus/malus, profit-sharing from passenger revenue and from ticket validation, and so forth).

Local authorities, organisations and other transport authorities
Specific or custom earnings from transport services.

Government, regional authorities and the European Union
Investment subsidies (co-funding).

Additional resources
Advertising revenue, commercial leases, fines, and so forth.

RATP
RATP EPIC is the long-standing operator of the multi-modal network in the Île-de-France region, which is one of the densest in the world.

RATP CAP ÎLE-DE-FRANCE
Subsidiary dedicated to the development and operation of new urban mobility markets in the Île-de-France region (operating in a competitive environment).

RATP CAP ÎLE-DE-FRANCE
Subsidiary dedicated to the development and operation of transport networks in France and abroad through approximately one hundred subsidiaries (competitive environment).

Clients

- Transport authorities
- Passengers
- Advertisers

Services provided

- Multi-modal transport
- Activities in stations
- Retail outlets

Areas of expertise and expenses

Employees
Salaries and training, to only name a few, for bus and train drivers, maintenance workers station staff, and so forth.

Suppliers
Energy, chartering, materials, intellectual services, and so on.

State and local authorities
Taxes and levies.

URBAN SERVICES

€38 million **in consolidated revenue**

RATP SOLUTIONS VILLE
RATP Solutions Ville is the Group subsidiary in charge of urban services, which serves cities and regions. Five areas of activity: urban logistics, new forms of mobility, real estate, telecommunications, and energy.

Resources	Structures	Clients/ Partners	Contractual framework	Partners	Clients/ Partners	Contractual framework
RATP Solutions Ville relies on the Group's expertise and assets: social housing, commercial buildings and infrastructure.	RATP LOGISTICS	Logistics specialists	Occupancy agreements based on public calls for tenders	Connect Grand Paris with **Caisse des Dépôts**	Société des Grands Projets	Concessions/ DSP
	RATP CAPITAL INNOVATION	Start-ups	Equity stakes	FRAÎCHEUR DE PARIS with **Engie group**	VILLE DE PARIS	
	RATP HABITAT	Cities and local authorities	Housing management	Rehabilitation of the AP-HP headquarters with Apsys and BNP Paribas Real Estate	ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS	Co-promotion of real estate
	RATP REAL ESTATE	Companies	Provision of services, analyses and project management assistance and operations management		VILLE DE PARIS	
	RATP CONNECT	Telecom operators				

Structures can take part in new city projects

INFRASTRUCTURE MANAGEMENT

€1.093 billion **in consolidated revenue**

Resources

Transport authority-regulated activities
Île-de-France Mobilités (transport authority)
- Operating and investment earnings for the maintenance of the long-standing network (multi-year contract)
- Earnings for the preparatory stages and maintenance of the Grand Paris Express (GPE) network (dedicated agreement)

Société des Grands Projets (SGP)
- Statement of maintenance needs and associated checks (dedicated agreement)

Unregulated activities (income split 50% with the transport authority)
- Advertising revenue
- Management agreements for commercial property
- Telecom licence fees for the use of infrastructure

Government, Société des Grands Projets and local authorities
Investment subsidies (co-funding)

Others
- Property redevelopment

RATP INFRASTRUCTURES

Infrastructure management on the long-standing RATP railway network
- Manages infrastructure facilities, upkeep and renewal (metro stations, train stations, tunnels, art works, and so forth)
- Guarantees safety, interoperability and public service continuity

M
14 lines +2 alternative lines
371 stations
201 km of track

RER
2 lines (A et B)
66 stations
118 km of track

Over 70 equipment families

Management of the technical aspects of lines, projects and installations on the Grand Paris Express public transport network

Upon completion
1st automated network worldwide
4 lines 200 additional kilometres
68 new stations

Clients

- Transport authorities
- Transport operators
- Passengers
- Société des Grands Projets
- Advertisers
- Business owners

Services provided

- Network servicing and maintenance
- Network development and upgrading
- Infrastructure upgrading
- Preparation for the new technical management of the Grand Paris Express network

Areas of expertise and expenses engaged

Employees
Salaries and training, among other things, for project owners, maintenance operators, engineers, project managers, support staff, and so forth.

Suppliers
Equipment and services

State and local authorities
Taxes and levies

SECURITY

€151 million **in consolidated revenue**

The teams at RATP Sûreté(1) guarantee passenger safety, the protection of staff, assets and equipment, and the prevention of delinquency and anti-social behaviour in complex environments, such as multi-modal networks, confined spaces and dense passenger traffic. RATP Sûreté also made the prevention of violence and sexual harassment on public transport a priority. The unit, which is operated as a monopoly, receives a fixed-sum remuneration as part of its multi-year agreement with Île-de-France Mobilités. To stay in step with the opening to competition, a new pay-per-service economic model(2), regulated by French transport regulatory authority ART, came into force in 2023.

ADDITIONAL SERVICES

€23 million **in consolidated revenue**

RATP SMART SYSTEMS
Design, integration, operation and maintenance of ticketing, multi-modal information, operating assistance systems and Mobility as a Service (MaaS).

RATP TRAVEL RETAIL
Marketing and management of commercial spaces in transport facilities.

RATP MAINTENANCE SERVICES
Lifts and escalator maintenance and installation of security systems (airports, hospitals, large complexes, and so forth).

(1) RATP Sûreté is an internal security service that hires GPSR-approved (network safety protection group) agents who are certified, armed and invested with specific prerogatives including the right to evict — **(2)** Offer open to transport operators, transport authorities and transport service operators.

RATP Group: a long-term commitment to Corporate Social Responsibility

RATP Group continues to demonstrate its commitment to being a world leader in urban, sustainable and connected mobility. Its drive is to be the privileged partner of smart cities. The Corporate Social Responsibility (CSR) policy is fully in line with this goal and emphasizes the proactive and ambitious role that RATP is playing in energy transition and sustainable development.

Significant commitments

— 1996
Established first permanent exchange forum with approved passenger associations.

— 1999
Signed International Association of Public Transport (UITP) charter for sustainable development.

— 2003
Joined UN Global Compact.

— 2006
Implemented first energy policy.

— 2009
Implemented first sustainable development policy, and formed a CCA (*Comité consultatif de l'accessibilité* – accessibility advisory committee).

— 2011
Adopted first code of ethics.

— 2014
Published first Group CSR report.

— 2015
Signed CSR charter on Grand Paris (Greater Paris) contracts.

— 2017
Updated sustainable development policy and issued first green bond.

— 2018
Afnor awarded RATP Group the CSR-committed certification ("confirmed" level) RATP Group joined Transparency International's Forum of Committed Companies.

— 2019
Issued second green bond, and established new code of ethics, code of business conduct and anti-corruption code.

— 2021
Unveiled RATP Group driving purpose inside and outside the company, and defined action principles.

— 2022
Renewed "CSR-committed" certification, with RATP awarded "exemplary" level; RATP's climate commitments approved by the Science-Based Targets initiative (SBTi); launched Group energy efficiency plan; signed Ecowatt and Ecogaz charters; and signed the City of Paris' Tree Charter and Climate and Biodiversity Pact.

— 2023
Established new Group CSR policy and governance, established new energy policy, launched water efficiency plan, signed charter in favour of off-site construction and charter on building energy efficiency.

OUR CSR POLICY

In June 2023, the Group Chairman reviewed and validated the Group CSR policy. The aim of the review was to more closely align the policy with the Group's driving purpose and include the Chief Executive Officer's strategic priorities as well as a number of internal and external expectations and requirements.

The Group CSR policy focuses on three strategies:

1. BE A MAJOR PLAYER IN MOBILITY AND SUSTAINABLE CITIES

- Provide multi-modal, accessible, and safe mobility options
- Act in favour of environmental health
- Contribute to improving quality of life and urban resilience to climate change

2. ACCELERATE THE ECOLOGICAL TRANSITION OF OUR BUSINESS ACTIVITY

- Contribute to reaching carbon neutrality goals
- Conserve resources and protect biodiversity
- Roll out ecodesign across our business activities

3. ASSERT OUR CORPORATE AND SOCIAL RESPONSIBILITY

- Prevent occupational risks and promote management that encourages staff commitment
- Contribute to the economic vitality and solidarity of regions
- Ensure fair business practices in our value chain

The Group's CSR commitment has always been long-term and on a voluntary basis. It has shown promising results in its performance so far. In 2017, in addition to a new and even more ambitious CSR policy, it was natural for the Group to consider launching an inaugural Green Bond. The operation was renewed in 2019 and 2024.

RATP Group naturally contributes to the UN's sustainable development goals.

Extra-financial assessment

In 2023, RATP underwent a follow-up assessment as part of obtaining CSR-committed certification from Afnor, which confirmed the company's positive sustainable development score in its long-established base in the Île-de-France region. In 2022, RATP's certification was renewed with a significantly higher score, allowing the company to reach the Exemplary level, the highest in the benchmark.
RATP is the world's first transport operator to have obtained the Confirmed maturity level in 2018, with such a broad scope from the initial assessment. Today, it is the only company in its sector to be certified Exemplary.

ENGAGÉ RSE
MODÈLE AFAQ 26000
Exemplaire ★★★
AFNOR CERTIFICATION

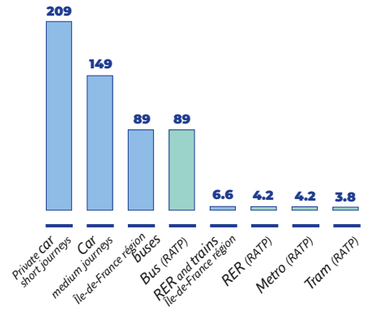
(1) Covid-19 health crisis leading to a historic drop in network use.

Contribute to reaching carbon neutrality goals

Public transport is in and of itself the most ecological way to go from one place to another. Opting for public transport in the Île-de-France region means using only a fifth of the energy needed for the same trip by car. RATP travelers using the metro, RER or tram emit 50 times less greenhouse gas than when they use a car.

Encouraging shared low-carbon mobility

CO_2e/passenger-km



In gCO_2e/passenger-km

RATP has produced a carbon footprint report since 2005 (scopes 1, 2 and 3). This report is updated every three years.

In order to contribute to carbon neutrality, RATP Group gives priority to reducing its GHG emissions and developing low-carbon services.
In 2021, RATP updated its Bilan Carbone® (Carbon Footprint). It makes it possible to estimate the GHG emissions generated directly and indirectly by the company's activity (scopes 1, 2 and 3). Within this area, overall emissions are estimated to be 890,000 tCO_2e.
The most significant GHG emission item for RATP is energy. Energy accounts for 99% of the emissions of scopes 1 and 2, 44% if we consider overall emissions, scopes 1, 2 and 3.

RATP wishes to act on all of its direct and indirect emissions (scopes 1, 2 and 3). In addition to the emissions associated with its energy consumption, the other significant items are fixed assets (emissions estimated to be 33%) and purchases (emissions estimated to be 14%). A major challenge remains the reliability of the calculation of Scope 3 emissions.

RATP introduced its energy policy in 2006. RATP Group obtained ISO 50001 certification for its energy management system for the first time in 2017 and became the first multi-modal transport operator in the world to receive this certification for all its activities. In 2023, RATP's ISO 50001 certification was renewed.

In November 2022, RATP's climate commitments were validated by the Science-Based Targets (SBTi) initiative. This recognises RATP's commitment to the most ambitious level of the Paris Agreement – capping global warming at 1.5 °C.
To achieve this, **RATP has undertaken to achieve the following by 2027:**
- **Reduce GHG emissions associated with its energy consumption by 43% compared to 2019;**
- **Guarantee that 70% of purchases are from SBTi-committed suppliers.**

By the end of 2023, the following results were obtained:
- GHG emissions associated with energy consumption were 30% lower than in 2019.
- A survey was conducted among RATP suppliers in 2023 to determine the purchasing indicator. Reliability studies have been conducted to guarantee the robustness of the indicator.

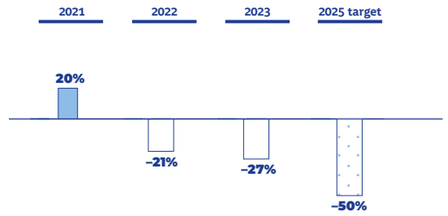
1st
network in the world to be fully equipped with LED lighting in its RER and metro stations

1st
multi-modal network in the world to be ISO 50001-certified in all areas of activity

59%
hybrid, electric or biomethane buses (700 electric buses, 1,100 biomethane buses out a fleet of 4,900 buses at the end of 2023)

Approximately 5,000
bike parking spaces across the RATP network by 2024

Trends in GHG emissions – RATP



Evolution in greenhouse gas emissions per passenger.kilometre compared to 2015

This indicator measures the company's overall carbon performance (scopes 1, 2 and 3 associated with energy consumption) in relation to the number of passenger-kilometres transported.
RATP is continuing its efforts to reduce its greenhouse gas emissions. RATP-generated GHG emissions (measured in tonnes of CO_2e) fell 32% below 2015 levels. However, the number of passenger-kilometres covered, which is still recovering from the consequences of the 2020 health crisis, was 7% lower in 2023 than in 2015. The improved carbon efficiency indicator is therefore exclusively the result of lowered GHG emissions.

The RATP Green Bond issuance, dedicated to low-carbon and sustainable transport, is an opportunity to emphasize the group's strategy in terms of sustainability and climate change. It also enables RATP to diversify its investor base, through a more action-oriented dialogue with Socially Responsible Investors. Moreover, the RATP Green Bond will encourage other public transportation providers to fund rail investments and other low-carbon and sustainable transport investments, while complying with the highest standards of the Green Bond market. The RATP Green Bond also encourage project management teams to integrate the carbon and energy criterion at an earlier stage in the design phase.

OUR GREEN BOND PROGRAM

RATP is rated in compliance with standards from the French state on the following terms:

- Strategic importance as the owner and infrastructure manager of urban transport in Paris
- Strong state support – 100% state-ownership
- Legally protected from events such as insolvency and bankruptcy procedures by virtue of its EPIC status (industrial and commercial public undertaking)
- Resilient budgetary performance and medium-term debt stabilization

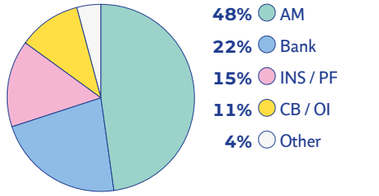
Aligned with the Green Bond Principles

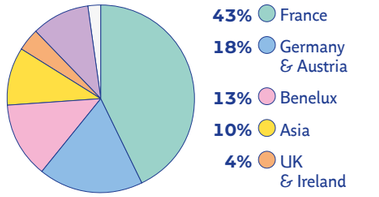
The Green Bond Principles

Main characteristics of the 2017 and 2019 operations

	2017	2019
ISSUER	**RATP**	**RATP**
RATING	Moody's: Aa2(St) Fitch: AA(St)	Moody's: Aa2(St) Fitch: AA(St)
ORDER BOOK	€1.6 billion	€1.8 billion
FINAL SIZE	€500 million	€500 million
ISSUE DATE	2017-06-22	2019-06-13
SETTLEMENT DATE	2027-06-29	2029-06-20
MATURITY DATE	2027-05-25	2029-06-20
PRICE/REOFFER YIELD	99.736% / 0.9030%	99.696% / 0.381%
COUPON	0.875%	0.350%
SPREAD	OAT interp +30 bp	OAT interp +26 bp

Typological and geographical distribution of investors





Eligible green projects summary

PROJECTS FINANCED BY THE RATP GREEN BOND IN 2017

Renewal of rolling stock on RER line A, the busiest regional train in Europe

€250 million
financed by the bond
100% refinancing

Category: public transport rolling stock renovation and renewal

1 TWh energy savings
50,400 tCO_2e avoided

Automation of Paris metro line 4

€200 million
financed by the bond
100% new financing

Category: public transport infrastructures maintenance and renovation

140 GWh energy savings
6,700 tCO_2e avoided

Purchase of 100% electric maintenance RER shunters

€50 million
financed by the bond
100% new financing

Category: public transport rolling stock renovation and renewal

32 GWh energy savings
14,000 tCO_2e avoided

PROJECTS FINANCED BY THE RATP GREEN BOND IN 2019

Bus2025: the ambitious RATP plan for a 100% ecologically friendly fleet in the Paris region

€250 million
financed by the bond (bus and depots)
56% new financing
44% refinancing

Category: other public transport low-carbon vehicles

143,000 tCO_2e avoided per year

Vaugirard Workshops: an industrial and urban project, an exemplary urban mix operation

€100 million
financed by the bond (workshops)
72% new financing
28% refinancing

Category: public transport infrastructures maintenance and renovation

New vehicles for metro line 14: more ergonomic vehicles with more capacity for an extended line

€150 million
financed by the bond (vehicles)
76% new financing
24% refinancing

Category: public transport rolling stock renovation and renewal

340 GWh energy savings
13,140 tCO_2e avoided

Description of financed projects and major benefits financed by bond proceeds in 2017

PROJECT: AUTOMATION OF PARIS METRO LINE 4

Category 1
Public transport infrastructures maintenance and renovation
(One project financed)

€200 million
100% new financing

In the summer of 2013, RATP, the project owner, and Île-de-France Mobilités, the public transport authority, began the automation of metro line 4. The project is set to be completed in 2023. This automation project can be divided into five subprojects: infrastructure upgrades, platforms and platform doors, the automated system, rolling stock, and change management.

At the end of 2019, the infrastructure upgrades were complete: all the platforms had their height adapted and were reinforced to install platform doors. These steps were completed on schedule. Since March 2021, each station is equipped with platform doors; the early benefits are already visible regarding line 4 traffic.

By 13 January 2022, line 4 was extended with new stations on its southern section. Unattended trains will be operated by a Communication Based Train Control system (CBTC) with a new Operation Control Center (OCC). The new OCC has been operational since May 2020.

Concerning rolling stock, predisposition works are finished for the first MP89C-MP05 and MP14 trains and automation mode trials have begun and have been pursued during the extension trial period. The first automated trains will be seen on line 4 in 2022. Finally, technical progress brought about by automation should also benefit social progress: several social agreements were signed with the unions to organize the transition to automation.

140
GWH ENERGY SAVINGS

6,700
tCO_2e SAVED

Major sustainable benefits

Line 4 main features
- North/south backbone of the Paris metro
- Built 1908-1910
- 1st below-river crossing in 1910
- 14 kilometres, 29 stations (27+2: extension in progress)
- The second busiest Parisian metro line after line 1 with more than 700,000 passengers per day (172 million trips per year)
- Connected to all metro lines (13) and suburban lines (5)
- Sudden peaks in traffic demand
- Tourist areas, 3 major railway stations (TGV)

Project opportunities for line 4
- Redeployment of automated 6-car trains from line 14
- Short-term renewal and/or modernisation needed on line 4 infrastructure
- Improvement of service quality offered by an automatic system (through improved reliability, capacity, resilience and adaptability), for a line with an irregular and atypical traffic
- An opportunity that makes sense in the context of the Grand Paris Express project with its future connection to the south
- The project will improve the energy savings through the economic piloting of trains and the optimisation of regenerative breaking enabled by the automated system
- The project will reduce GHG emissions thanks to internal energy savings and modal shift

Project challenges
- A 100-year-old line and/or sensitive infrastructure
- No traffic interruption or works at night during a limited time schedule
- 3 different generations of automated rolling stock
- Line extension in parallel
- Difficult transition stages
- Exceptional concentration of worksites between 2015 and 2020
- Reduced schedule compared to line 1 automation
- Change management: technical progress should lead to social
- Progress and better service

Project benefits
- Improved safety (with platform screen doors and CBTC for train speed control)
- Improved security with CCTV in trains and stations
- Direct operational savings, energy savings
- Fewer delay related economic losses
- Improved capacity, reliability and resilience
- Real time adaptability and/or tailor-made offers

Description of financed projects and major benefits financed by bond proceeds in 2017

PROJECT: RENEWAL OF ROLLING STOCK ON RER LINE A

Category 2
Public transport rolling stock renovation and renewal.
(Two projects financed)

€250 million
100% refinancing

The challenge of this project is to modernize the vehicle fleet of the urban train line that is the most frequented in Europe, with 305,000,000 passengers per year.

It consists of designing and supplying self-propelled elements with the group Alstom/Bombardier. The first order of 130 pieces was placed in April 2009.

For the first time, RATP decided to draft a specification incorporating all the environmental issues considered necessary, going even beyond the regulatory constraints.

The first commercial commissioning in the presence of the French President occurred in December 2011.

The Group placed an additional order for 10 items in July 2015.

The commercial operation of the 140th and last train ordered began in April 2017, i.e. six weeks ahead of contract schedule.

Major sustainable benefits

RER line A main features

- East/west backbone of the Paris regional train
- 1,200,000 passengers per day
- 109 kilometres, 46 stations
- Connected to all the main metro and train station in the Paris region

Project opportunities for line A

- Decongestion of a line which became a victim of its own success, due to the increased urbanism in the Paris region
- Further enhance the capacity of the line, in addition to the increased performance already made possible by automatic train control
- Modernise and standardise the materials used on the line
- Facilitate the operations in real time of trains injection in the network and maintenance, via a fleet of interchangeable rolling stock

Project challenges

- Renew the fleet in a minimal amount of time
- Adapting the infrastructure at the same time as the arrival of new vehicles

Project benefits

- Reduction of energy consumption
  → Energy savings and better regeneration (breaking energy recovery) By transported passenger:
  – 31% to 55% decrease in consumption of energy compared to the replaced trains
  – 20% drop compared to the previous generation of trains at two levels of the RER A
- Reduction of consumption of used materials
  → a Recyclability studies and analysis of the life cycle for what has changed compared to the previous generation of equipment to two levels according to ISO 22628
  → Recyclability rate reached
- 91.5%: reduction of noise emissions
  → Compliance with the TSI noise
- Several areas for wheelchair users
- Reducing the impact on the air
  → Work on the rate of wear of the friction material and braking by energy recovery privileged
- Controlled waste production
  → Sealing of the organs requiring grease – reduction of waste in general

1
TWH ENERGY SAVINGS

50,400
tCO_2e SAVED

Description of financed projects and major benefits financed by bond proceeds in 2017

PROJECT: PURCHASE OF 100% ELECTRIC MAINTENANCE RER SHUNTERS

Category 2
Public transport rolling stock renovation and renewal.
(Two projects financed)

€50 million
100% new financing

To improve the internal air quality in transport infrastructure, RATP Group decided to purchase fully-electric maintenance shunters for RER operations. Shunters are the locomotives used to tow the work trains in order to maintain the tracks and tunnels.

In March 2017, this led to the autonomous shunter contract for the design and the supply of 12 shunters with CAF/CAF France, and to placing an order for these 12 items.

CAF finished the studies at the end of 2021. Manufacturing is now underway: CAF has committed to finalize production of the first 2 shunters for September 2022 and, after a mandatory testing phase, to deliver them to RATP in May 2023.

The delivery of the last 10 shunters is scheduled at the rate of one per month in 2024. This will mark the end of the project, as far as the Green Bond proceeds extend.

32
GWH ENERGY SAVED

14,000
tCO_2e SAVED

Major sustainable benefits

Project opportunities

- Ensure coherence with the company's virtuous and ecoresponsible approach towards air quality improvement and the environmental impact of public transport in Paris region reduction program
- Participation to the Paris City policy "diesel fuel eradication by 2020"
- Anticipation of future indoor air quality regulations
- Studies and manufacturing of tractors are carried out by the French subsidiary of CAF based in Bagnères-de-Bigorre (Hautes-Pyrénées). This contract has allowed a hundred jobs to be saved in France for three years on the site and among subcontractors

Project challenges

- The development of a completely electric dual mode shunters: catenary 1,5 kV and embedded traction batteries
- At the time of the definition of the needs, there was no equipment available to be carried out on RATP sites
- Those devices are intended to intervene on the building rights that the catenary fed or not, they can also evolve on infrastructures not equipped with catenary
  → Routings and set-ups are carried out with the catenary feed whenever it is possible
  → The capacity of the traction batteries allows the execution of circulations on an infrastructure site. These circulations take place mainly during the period of interruption of the operation i.e. at night

Project environmental benefits

- Pollution prevention and control by a total eradication of diesel engine pollutant gas due to the actual shunters – 4 different diesel engines types – especially in tunnels
- Total suppression of diesel pollution in tunnels
- Improvement of the air quality to all passengers
- Improvement of health and safety and employment conditions by the reduction of RATP staff exposure to pollutant gas

Description of financed projects and major benefits financed by bond proceeds in 2019

PROJECT: BUS2025

Category 4
Other public transport low-carbon vehicles
(One project financed)

€250 million

56% new financing
44% refinancing

The European Commission granted a €23 million subvention for the purchase of electric buses and the conversion of bus depots to electric power (for the Lagny, Corentin, Pleyel, Lilas and Lebrun bus depots) and to NGV power (for the Massy, Bussy, Thiais and Nanterre bus depots) by 2025.
With the funding, the Commission supports Île-de-France Mobilités' and RATP's commitment to their energy transition set out in the Bus2025 program.

It is a 3-phase project:
- 2015: real-life trials;
- 2017: first deployment with the first huge bid to acquire electric buses;
- 2019: large scale deployment.

This is a double challenge: the depots must be transformed, and the mitigation of the impact on the electric grid must be taken into account.

After the study phase, the site conversion projects are launched: since 2021, 24 out of the 25 sites are in the project phase, with the aim of completing construction by mid-2024 (except for the Charlebourg site, which is undergoing a property development project):
- Construction in Créteil, Massy, Thiais, Bussy (CNG), and Lagny and Corentin (electric) are completed. Works in Nanterre (CNG) Pleyel (electric): the depots are almost 50% operational.
- Construction will start in few weeks on 6 additional sites: Flandres, Saint-Maur (CNG), Lilas, Lebrun and Malakoff, Croix-Nivert (electric).
- The other sites are undergoing a design process, from the planning and AVP phases to the purchasing phases.

Rapid deployment of buses (600 buses per year from 2021 to 2025) is currently in progress. RATP has implemented the necessary changes in the organization of operation and maintenance at the level of operational teams and central support teams to allow this process.

At the end of December 2021, the RATP bus fleet is comprised of 1,105 hybrid buses, 400 electric and 600 CNG-powered buses.

143,000

tCO_2e SAVED PER YEAR

Major sustainable benefits

- To stand out by meeting increasingly higher expectations in terms of service level, performance and environmental impact.
- To be a pioneer in the operation of a fleet of large-scale clean energy buses.
- To offer a reliable, comfortable service, in line with passenger expectations.

Description of financed projects and major benefits financed by bond proceeds in 2019

PROJECT: VAUGIRARD WORKSHOPS

Category 1
Public transport infrastructure maintenance and renovation

€100 million

71% new financing
29% refinancing

The Vaugirard project involves redeveloping the maintenance workshops for metro line 12 while allowing them to continue their activities.
The workshops will combine housing (including social housing), local shops, green spaces, and public and cultural facilities.

The innovative proposals devised by RATP will lead to the birth of a new district, with the creation of an urban road and a pedestrian alley way:
- Two maintenance workshops: rolling stock and equipment;
- 285 housing units (50% social housing);
- a daycare center for children, food shops;
- 700 m² dedicated to urban agriculture and one of the largest green rooftop in Paris with 15,000 m².

The main phases of the project are:
- February 2019: laying the first stone
- 2023: delivery of social housing, equipment maintenance workshops
- 2024: delivery of private dwellings
- 2029: restructuring the train maintenance workshop, and delivery of other parts of the social housing units

Work on phase 1 is in progress (12,000 m² of equipment maintenance workshop, a building with 35 private dwellings, another with 100 private dwellings also comprising a daycare center, and 104 social housing units delivered). Phase 2 will consist of building the train maintenance workshop and a final set of 50 social housing units.

Major sustainable benefits

- A decrease to one third of the regular energy consumption between the new RATP workshops and the old ones, i.e. approximately 580 tCO_2e GHG emissions prevented per year.
- The entire project is part of an "Environmental approach to urban planning" implemented by RATP Group in partnership with the Ademe (French Agency for the environment and energy management).
- Thermic Regulation (RT 2012): –30% targeted energy consumption for housing units.
- Housing units are certified "habitat environment" and meet the requirements of ecodesign. 50% are social housing.
- The project maintains employment of blue-collar workers in dense areas and the urban mix.

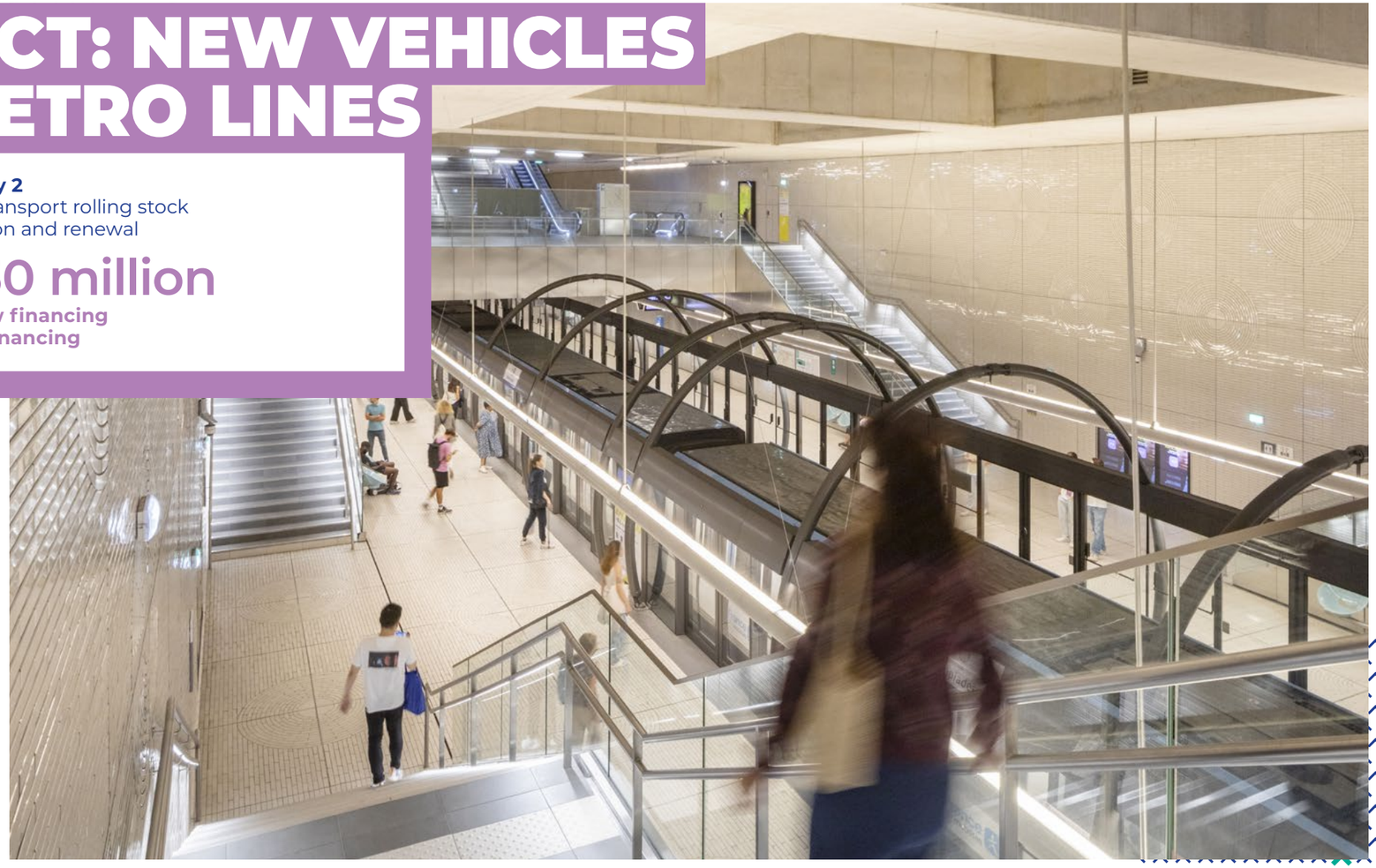
Description of financed projects and major benefits financed by bond proceeds in 2019

PROJECT: NEW VEHICLES FOR METRO LINES

Category 2
Public transport rolling stock renovation and renewal

€150 million

76% new financing
24% refinancing



40%
QUIETER: –2DBA INSIDE

95%
OF RECYCLABILITY

Metro line 14 was the first high-capacity automated metro line commissioned worldwide in 1998.

As the line is the backbone of the future Grand Paris Express, and on the occasion of its extension to Mairie de Saint-Ouen in 2020 (Covid-19 impact), its rolling stock will be renewed across the entire line (first order of 35 trains).

Three trains were put into service in 2020 and 11 in 2021.

Major sustainable benefits

Energy savings
Thanks to the new generation of energy recovery braking systems and motors, 17% energy will be recovered on the line with the new vehicles.

Air quality
Thanks to electrical braking, there is a reduction in the emission of particles.

Social impacts and comfort
Each train will offer 48 seats for people with reduced mobility and 2 areas for wheelchair users. The vehicles will be completely accessible (wide circulation areas, new ergonomic seats).

Allocation of borrowed funds

Allocation report at category level

Investments	2017		2018	2019		2020	2021	2022	2023
	Total amount of proceeds Target 2017	Total allocated amount in 2017 and %	Total allocated amount in 2018 and %	Total amount of proceeds Target 2019	Total allocated amount in 2019 and %	Total allocated amount in 2020 and %	Total allocated amount in 2021 and %	Total allocated amount in 2022 and %	Total allocated amount in 2023 and %
Category 1: public transport infrastructures maintenance and renovation	€200.00 M(1)	€44.85 M 22.00%	€104.52 M 52.00%	€300.00 M	€186.81 M 62.00%	€242.29 M 81.00%	€261.97 M 87.00%	€ 277.98 M 93.00%	€292.38 M 97.00%
Category 2: public transport rolling stock renovation and renewal	€300.00 M	€255.24 M 85.00%	€258.17 M 86.06%	€450.00 M	€298.55 M 66.35%	€301.98 M 67.00%	€450.00 M 100.00%	€450.00 M 100.00%	€450.00 M 100.00%
Category 3: modernisation of public transport stations and facilities	–	–	–	–	–	–	–	–	–
Category 4: other public transport low-carbon vehicles	–	–	–	€250.00 M	€110.12 M 44.04%	€250.00 M 100.00%	€250.00 M 100.00%	€250.00 M 100.00%	€250.00 M 100.00%
TOTAL inaugural Green Bond	€500.00 M	€300.00 M 60.00%	€362.69 M 73.00%	€1,000.00 M	€595.48 M 59.00%	€794.27 M 80.00%	€961.97 M 96.00%	€977.98 M 98.00%	€992.38 M 99.00%

Allocation report at project level

Investments	2017		2018		2019		2020		2021		2022		2023	
	Total amount of proceeds	Total allocated amount in 2017 and %	Total amount of proceeds	Total allocated amount in 2018 and %	Total amount of proceeds	Total allocated amount in 2019 and %	Total amount of proceeds	Total allocated amount in 2020 and %	Total amount of proceeds	Total allocated amount in 2021 and %	Total amount of proceeds	Total allocated amount in 2022 and %	Total amount of proceeds	Total allocated amount in 2023 and %
Automation of Paris metro line 4 100% new financing	€200.00 M	€44.85 M 22.00%		€104.52 M 52.00%	–	€158.54 M 79.00%	–	€200.00 M 100.00%	–	€200.00 M 100.00%	–	€200.00 M 100.00%	–	€200.00 M 100.00%
Renewal of rolling stock on RER line A, the busiest regional train in Europe 100% refinancing	€250.00 M	€250.00 M 100.00%		€250.00 M 100.00%	–	€250.00 M 100.00%	–	€250.00 M 100.00%	–	€250.00 M 100.00%	–	€250.00 M 100.00%	–	€250.00 M 100.00%
Purchase of 100% electric maintenance RER shunters Refinancing substitution MI09(2)	€50.00 M –	€5.24 M 10.00% –		€8.17 M 16.00% –	–	€13.16 M 26.00% –	–	€17.00 M 34.00% €33.00 M	–	€50.00M –	–	€50.00 M –	–	€50.00 M –
Bus2025	–	–	–	–	€250.00 M	€110.12 M 44.05%	–	€250.00 M 100.00%	–	€250.00 M 100.00%	–	€250.00 M 100.00%	–	€250.00 M 100.00%
Vaugirard workshops	–	–	–	–	€100.00 M	€28.27 M 28.00%	–	€42.29 M 42.00%	–	€61.97 M 62.00%	–	€77.98 M 78.00%	–	€92.38 M 92.00%
New vehicles for metro lines Refinancing substitution MI09(1)	– –	– –	– –	– –	€150.00 M –	€35.40 M 24.00% –	– –	€33.00 M 22.00% €117.00 M	–	€150.00 M –	–	€ 150.00 M –	–	€150.00 M –
TOTAL inaugural Green Bond	€500.00 M	€300.00 M 60.00%	–	€362.00 M 73.00%	€1,000.00 M	€595.49 M 59.00%	–	€794.27 M 80.00%		€961.97 M 96.00%	–	€977.98 M 98.00%	–	€992.38 M 99.00%

(1) M: million.
(2) Since 2020, the rolling stock has been 100% financed by Île-de-France Mobilités, in accordance with the terms of the contract concluded between RATP and Île-de-France Mobilités.
The remaining funding for vehicles metro lines and electric maintenance RER shunters have been carried over to the project Renewal of rolling stock on RER line A.

METHODOLOGY OF THE GREEN BONDS PROGRAM INDICATORS

Disclamer

For each investment, the potential energy savings and greenhouse gas (GHG) emissions avoidance was estimated. The aim is to highlight the impact of each investment on the reduction of greenhouse gas (GHG) emissions and the energy transition.

Only the direct effects of the operation phase of the projects were taken into account. Thus, indirect effects such as emissions avoided when a passenger uses public transport instead of using their car are not included.

In the absence of reliable data, the GHG emissions and energy consumption associated with the equipment and rolling stock construction phase were not included in the calculation.

GHG emissions measured are emissions associated with energy use.

PROJECT: AUTOMATION OF PARIS METRO LINE 4

140	6,700
GWh energy savings	tCO_2e avoided

The automation of metro lines can generate direct energy savings. The automation offers the opportunity to create various types of circulating depending on the needs: "tight running" for peak hours and "coasting" for off-peak hours. These changes are aimed at optimising:
- the acceleration and braking phases (ec-driving) and;
- the synchronisation of the trains' departures and arrivals in stations in order to recover braking energy.

This impact has been estimated at:
- energy savings of 5 GWh per year;
- avoidance of 220 tCO_2e per year;
- 34 tCO_2e avoided/euro million invested.

Methodology

Ex ante evaluation

The evaluation is carried out ex-ante since the automation project for line 4 is currently being implemented.
The evaluation is based on RATP's experience in operating automatic lines. On metro line 14, RATP measured the impact of similar implementations (ecodriving on an automatic line), based on its actual energy consumption.
Three measurement campaigns were carried out by RATP in 2010 to assess the energy consumption of metro line 14.
The energy savings resulting from the implementation of these measures on metro line 14 is estimated at 16%.
By analogy, the potential gain associated with the automation of metro line 4 is estimated at 10% of the consumption of the line (low hypothesis). Direct and indirect emissions associated with energy consumption have been considered.

Air quality

The automation of line 4 improves air quality by enhancing electric braking and also reducing rolling stock particle emissions.
In this way, automation offers the opportunity to energy recovery, with electric bracking as a substitute for mechanical braking. In the braking phase, trains are able to restore their kinetic energy in the form of electricity directed to other trains: this is the electric braking energy recovery. Synchronism (train pulling while another one is braking) is necessary for the energy exchanges to take place.
An ex-ante evaluation is carried out based on the feedback from RATP following the automation of metro line 14.
On line 14, RATP measured the impact of the wear of friction materials (the main source of dust in underground railway enclosed areas) before and after implementing ecodriving. According to calculations, the implementation of ecodriving reduces the number of braking equipment by 53%.
Therefore, this calculation highlights a reduction of more than 50% of the main particle sources on metro line 14.
By analogy, following the automation of line 4, a significant decrease in the wear of friction materials is expected and therefore a reduction of the concentration of associated particles in stations.

Social benefits

Many social co-benefits are also created as part of the metro automation projects "by RATP". In fact, the success of the automation of metro line 4 relies on its technical quality as much as on the control of the social subject associated with the project.
The implementation of automatic systems is more reliable but can also be more complex. Consequently, new technical skills need to be acquired both at the level of operations and maintenance. Therefore, the automated metro induces new work organizations creating new and more rewarding professions, with a greater variety of tasks. These jobs are higher-skilled and therefore better paid.
Metro line 14 was designed as fully autonomous and inaugurated in 1998. Since it was a successful "managerial experiment", the automatic system has been integrated into the modernization program of the Paris metro as a whole.
In regard to the unions, network upgrade was approached on a general level, which integrated the automation of metro line 1 in 2011 and metro line 4, currently underway.
In addition, RATP is able to implement the automation without any major interruption of operations. Jobs must be adapted as work progresses. In addition to negotiations with the trade unions, a constructive dialogue has been set up between the engineering, operations and maintenance departments. Staff members of the line benefit from an ongoing training program and specific supervision while they acquire the necessary skills to perform their new duties in a constantly evolving context.

PROJECT: RENEWAL OF ROLLING STOCK OF THE RER A

1 TWh energy savings

50,400 tCO_2e avoided

Rolling stock fleet modernization is an important lever for continuing to improve the energy performance of the transport networks operated by RATP.
The upgrade of the RER line A rolling stock fleet with the arrival of MI09 has led to very significant benefits both in terms of energy consumption and associated GHG emissions.
The recovery and reuse of braking energy on the line is made possible thanks to the new equipment.
The environmental balance sheet on the depreciation period of the investment (30 years and 140 elements) is estimated at:
- energy savings of 1 TWh;
- 50,400 tCO_2e avoided;
- 202 tCO_2e avoided/euro million invested.

Methodology

Ex post evaluation

The evaluation is carried out ex-post. Energy savings and GHG emissions avoided by replacing the arrival of MI09 equipment had been estimated from measurements on a fleet sample. Direct and indirect emissions associated with energy consumption have been considered.
The calculation is made over the life of the investment, i.e. 30 years.

PROJECT: PURCHASE OF 100% ELECTRIC MAINTENANCE RER SHUNTERS

32 TWh energy savings

14,000 tCO_2e avoided

RATP currently maintains the RER rail lines (line A and line B) with maintenance equipment running on diesel. With this investment, all of this maintenance will now be performed by electric locomotives. The project will therefore have a direct benefit in terms of both energy transition and GHG reduction.
The environmental balance sheet on the depreciation period of the investment ("30 years and 12 locomotives") is estimated at:
- energy savings of 32 GWh;
- 14,000 tCO_2e avoided;
- 279 tCO_2e avoided/euro million invested.

Methodology

Ex ante evaluation

The evaluation is carried-out ex-ante. Energy savings and avoided GHG emissions due to the replacement of diesel locomotives by electric locomotives are based on theoretical calculations. These calculations are carried out at the preliminary design studies stage. Direct and indirect emissions associated with energy consumption have been considered. The calculation is made over the life of the investment, i.e. 30 years.

Air quality

By replacing the diesel shunt fleet with electrical shunters, we obtain a 100% reduction in carbon monoxide, hydrocarbons, nitrogen oxides and particles emissions. Consequently, the impact is significant and immediate on air quality; especially underground (the main place of use of electrical shunters).
Indeed, the standard(1) emission on "phase 2" of diesel shunters in the current RATP fleet gives a maximum threshold of the net power category comprised between 130 kW and 560 kW:

Phase II: 01/2002	Mass of carbon monoxide – CO (g/kWh)	Mass of hydrocarbons – HC (g/kWh)	Mass nitrogen oxides – NOx (g/kWh)	Mass of particles (g/kWh)
Threshold	3.5	1	6	0.2
For 12 locotractors respecting the standard	42	12	72	2
Impact of the 12 electric locators of the investment as soon as they are used	0	0	0	0

(1) Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) no. 1024/2012 and (EU) no. 167/2013, and amending and repealing Directive 97/68/EC.

PROJECT: MP14

Rolling stock fleet upgrades are an important lever for continuing to improve energy performance on the transport networks operated by RATP.
The upgrade of the metro rolling stock fleet with the arrival of MP14 has led to very significant benefits both in terms of energy consumption and associated GHG emissions.
The new generation MP14-tyre rolling stock will be operated on lines 4, 11 and 14. The first trainsets were commissioned on metro line 14 in 2020.
The recovery and reuse of braking energy on the line is made possible thanks to the new equipment.
The environmental balance sheet on the depreciation period of the investment (30 years) is estimated at:
- energy savings of 340 GWh;
- 13,140 tCO_2e avoided;
- 178 tCO_2e saved/euro million invested.

Methodology

Ex ante evaluation

The evaluation is carried-out ex-ante. Energy savings and avoided GHG emissions due to the replacement of rolling stock are based on theoretical calculations. These calculations are made at the design study stage. Direct and indirect emissions associated with energy consumption have been considered. The calculation is made over the life of the investment, i.e. 30 years.

PROJECT: BUS2025

As a pioneer in energy and climate issues, RATP contributes to the energy transition and to improving outdoor air quality with the Bus2025 plan, which aims to provide a 100% low-carbon bus fleet. It is the first transport operator of this size to implement such an ambitious action plan.
In the long term, approximately half of the bus fleet will be lectric, and the other half powered by renewable gas.
Bus GHG emissions represent around 72% of RATP's energy consumption-related GHG emissions.
The Bus2025 plan, which is part of the Île-de-France region urban travel plan, thus has a big impact on RATP's carbon footprint.

Strictly considering the electric part of Bus2025 plan, the environmental balance sheet is estimated at 143,000 tCO_2e saved per year once the bus fleet is fully converted (compared to the initial diesel bus fleet).

Methodology

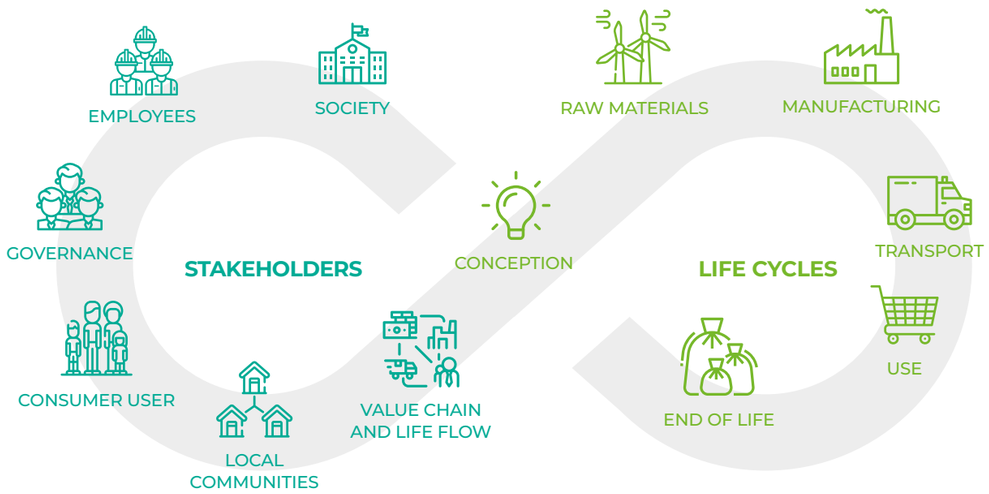
Ex ante evaluation

The evaluation is carried-out ex-ante. Avoided GHG emissions due to the replacement of buses are calculated based on estimations. The study is based on actual energy consumption data observed on transport lines operated by RATP. Direct and indirect emissions associated with energy consumption (including electricity) have been considered.

PROJECT: VAUGIRARD

The Vaugirard workshops adaptation project should make it possible to accommodate new, more efficient rolling stock, particularly in terms of energy consumption, on metro line 12.
An ecodesign approach has been implemented for this project.
Eco-socio-design is an approach that integrates environmental and social criteria from the design phase of a project.
This project is based on two approaches:
- infrastructure life cycle analysis;
- the integration of stakeholders.

This approach not only seeks to reduce negative impacts throughout the life cycle of the infrastructure, it must also make it possible to work on positive outcomes for its stakeholders and the environment.
In the case of the Vaugirard project, the 4 main lines of action of the approach are:
- quality of life at work *(qualité de vie au travail);*
- enhanced thermal comfort in summer in the workshop, integrating the effects of climate change;
- improvement of the workshop's natural lighting conditions;
- ecodesign;
- improving the future building's energy performance;
- limiting the carbon impact on the future building's life cycle.



Attestation by one of RATP EPIC Statutory Auditors

Report of the Statutory Auditor on the verification of a selection of information disclosed in the Green Bond Impact Report

In our capacity as Statutory Auditor of RATP EPIC (hereinafter the "entity"), we have undertaken a limited assurance engagement on the following information (the "Information"), in relation with the Green Bonds issuances on 22 June 2017, and 13 June 2019, presented in the Green Bond Impact Report (hereinafter the "Report"), available on the company's website:
– the allocation, as of 31 December 2023, of funds raised by the entity through the Green Bonds issued on 22 June, 2017, and 13 June 2019 ("the Issuances") contained in the Report;
– the projects financed by the Issuances and identified as eligible by the entity ("Eligible Projects").
The Information has been prepared in the context of the "Green Bond Framework" (hereinafter the "Framework") defined by the entity, and available on the entity's website(1).

Conclusion

Based on the procedures we performed, as described under the "Nature and scope of procedures" paragraph, and the evidence we obtained, nothing has come to our attention that causes us to believe that the Information is not prepared, in all material respects, in accordance with the Framework available on the entity's website.

Preparation of the Information

The absence of a commonly used and generally accepted reporting framework or of a significant body of established practices on which to draw to assess and measure the Information allows for different, but acceptable, measurement techniques that can affect comparability between entities and over time.

Consequently, the Information needs to be read and understood together with the Framework.

(1) https://ratpgroup.com/fr/medias-et-publications/finance/finance-durable/.

Responsibility of the entity

Management of the entity is responsible for:
– selecting or establishing suitable criteria for preparing the Information;
– selecting the Eligible Projects regarding the eligible criteria;
– preparing the Information in accordance with the "Framework";
– designing, implementing, and maintaining internal control over information relevant to the preparation of the Information that is free from material misstatement, whether due to fraud or error.

Responsibility of the Statutory Auditor

Based on our work, our responsibility is to provide a report expressing a limited assurance conclusion on the fact that the Information is free from material misstatement, whether due to fraud or error, and has been prepared, in all material respects, in accordance with the Framework.
As we are engaged to form an independent conclusion on the Information as prepared by management, we are not permitted to be involved in the preparation of the Information as doing so may compromise our independence.

It is not our responsibility to:
– challenge the eligibility criteria as defined in the Framework, and, in particular, we give no interpretation on the final terms of this Framework;
– form an opinion on the effective use of the funds allocated to the Eligible Projects after such funds were allocated;
– form an opinion on the impact indicators published in the Report.

Applicable professional guidance

We performed our limited assurance engagement in accordance with the professional guidance issued by the French Institute of statutory auditors (Compagnie nationale des commissaires aux comptes "CNCC") applicable to such engagement and international standard ISAE 3000 (revised)(2).

(2) SAE 3000 (revised) – Assurance Engagements Other Than Audits or Reviews of Historical Financial Information.

Our Independence and Quality Control

Our independence is defined by the provisions of Article L. 822-11 of the French Commercial Code and the French Code of Ethics for Statutory Auditors *(Code de déontologie)* of our profession. In addition, we have implemented a system of quality control including documented policies and procedures aimed at ensuring compliance with applicable legal and regulatory requirements, ethical requirements and the professional guidance issued by the French Institute of Statutory Auditors (Compagnie nationale des commissaires aux comptes) relating to this engagement.

Means and resources

Our work was carried out by an independent and multidisciplinary team including specialists in sustainable development and corporate social responsibility.

Nature and scope of procedures

We are required to plan and perform our work to address the areas where we have identified that a material misstatement of the Information is likely to arise.

To assess this risk, we took into account the entity's internal controls on the preparation of the Information in order to design appropriate assurance procedures, and not with the purpose of expressing a conclusion as to the effectiveness of the entity's internal control system.

The procedures we performed were based on our professional judgment. In carrying out our limited assurance engagement on the Information:
– we identified and conducted several interviews with the persons responsible for the collect of the Information, with the Directions in charge of overseeing the collect of the Information and, where appropriate, with those responsible for internal control and risk management procedures;
– we assessed the suitability of the procedures used by the entity to report the Information with respect to their relevance, completeness, reliability, neutrality and understandability, taking into account, where appropriate, best practices within the sector;
– we verified the existence of internal control and risk management procedures implemented by the entity;
– we verified the consistency of the Information with the accounting records and underlying data;
– we reviewed the processes used for data collection, aggregation, processing, monitoring and control, in particular the procedures relating to the allocation of funds as of 31 December 2023;
– on the basis of a representative sample of expenses:
  • verify the eligibility of these expenses with regard to the eligibility criteria defined in the Framework,
  • verify the concordance of the amounts of the expenses as of 31 December 2023, with the accounts and the data underlying the accounts;
– verify that the amount of funds allocated to projects is less than or equal to the amount of these projects as of 31 December 2023.

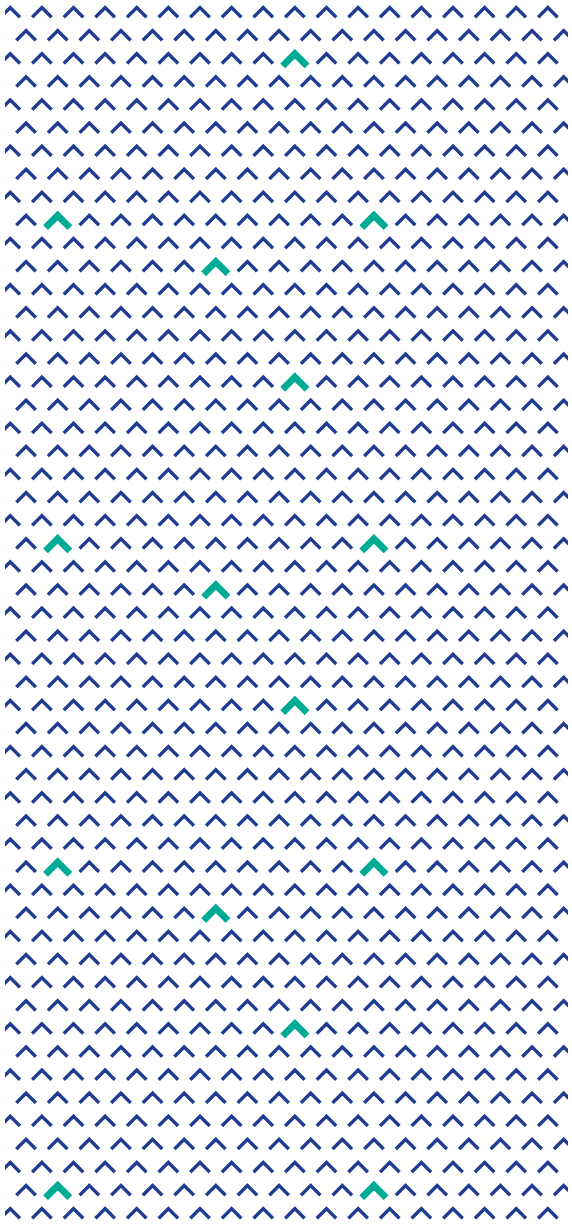
The procedures performed in a limited assurance review are less in extent than for a reasonable assurance opinion in accordance with the professional guidance of the French Institute of Statutory Auditors (Compagnie nationale des commissaires aux comptes), a higher level of assurance would have required us to carry out more extensive procedures.

This report has been prepared within the context described above and may not be used, distributed or referred to for any other purpose.

Paris-la Défense, 28 June 2024
KPMG SA

Stéphanie Millet, Partner
Brice Javaux, ESG Expert – ESG Center of Excellence

RATP Group naturally contributes to the UN's sustainable development goals. Detailed information available in the 2023 Financial and CSR report.



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