

MOBILITY AND CLIMATE CHANGE

Challenges involved
in climate change adaptation



RATP
GROUP

CONTENTS



RATP AT THE FOREFRONT ADDRESSING CLIMATE CONCERNS

p. 4

1

CLIMATE CHANGE: ANTICIPATION FOR MORE EFFICIENT ACTION

p. 6

2

HOW RATP ADAPTS ITS APPROACH TO THE CLIMATE EMERGENCY

p. 8

3

PROTECTING OUR STAFF DURING HEATWAVES

p. 14

4

SUPPORTING REGIONS: A CORE COMMITMENT IN RATP'S MISSION

p. 16

5

PREVENT, INFORM, AND RAISE AWARENESS

p. 18

6

CLIMATE CHANGE ADAPTATION: A GLOBAL CHALLENGE FOR THE GROUP

p. 20

7

PREVENTING FLOODS, PROTECTING THE NETWORK

p. 22

FOREWORD



© Fabien Breuil

MITIGATE, ADAPT, AND PROTECT:

RATP GROUP'S CLIMATE STRATEGY

Climate change is no longer a forecast in the distant future – it has become an everyday reality that we face. Heatwaves, torrential rains, and extreme weather events are some of the climate phenomena that are already adversely affecting daily life, and compromising the continuity of essential services, such as the one that we provide: public transport.

As a long-standing player in sustainable mobility, RATP is on the frontline, firstly, because public transport can essentially be leveraged to decarbonise various forms of mobility. And secondly, because our network, equipment, staff, and passengers are directly exposed to the effects of climate change.

To counter the dual challenge, we have launched a global strategy that focuses on three factors: reducing our carbon footprint, adapting our infrastructure, and managing risks and our resources sustainably, and more efficiently. This is a nationwide approach that includes working closely with local stakeholders, to increase regions' resilience to extreme climate events.

It involves upgrading our rolling stock, which is now cooled with refrigerated air, increased vigilance across our underground networks, notably with regard to flooding risks, and better coordination with other infrastructure managers.

We equally take into account issues related to our supply chain, while maintaining the safety and comfort of our passengers and employees at the top of our priorities. This is why we are making improvements to our employees' working conditions, to help them cope with heatwaves, but without neglecting the continuous goal of guaranteeing safety, health, and service quality.

Across the globe, through our subsidiary RATP Dev, we deploy effective climate resilience solutions in environments as varied as Casablanca, Cairo, and Riyadh. This global expertise fuels our capacity to innovate locally.

The ecological transition is no longer an option. It is our collective responsibility. At RATP Group, we are already taking it seriously.

Jean Castex,
RATP Group Chairman and Chief Executive Officer

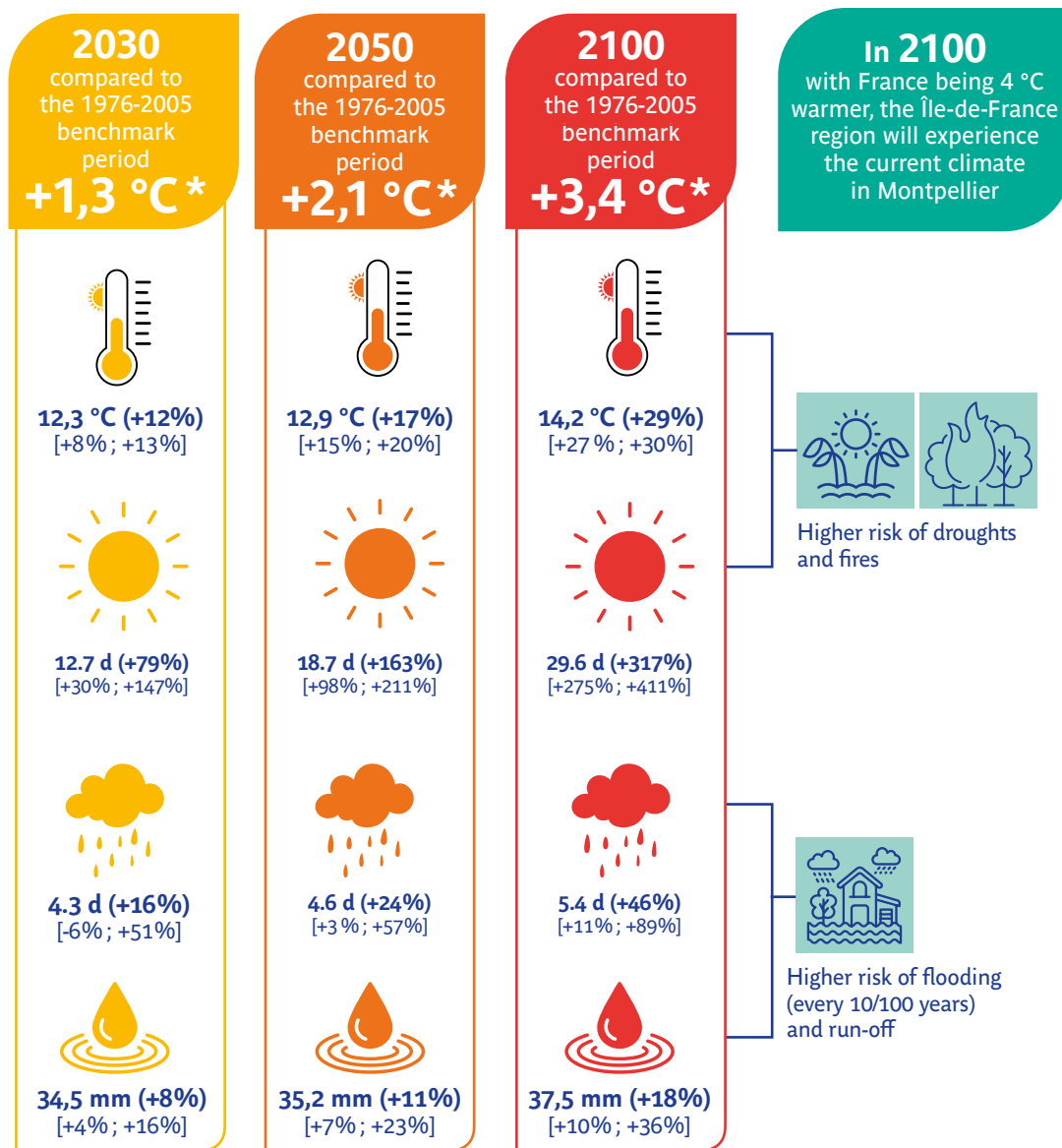
A stylized, handwritten signature in black ink, likely belonging to Jean Castex.

RATP AT THE FOREFRONT ADDRESSING CLIMATE CONCERNS

In response to the climate emergency, RATP Group tackles the causes and consequences of environmental change.

Climate forecasts

Climate change over the short term (2030), medium term (2050), and long term (2100) in the Île-de-France region



Median calculations (med %) [min % ; max %]
* average in France

Decarbonising our activity and contributing to carbon neutrality

Energy

Saving energy and facilitating access to decarbonised energy sources

- **43% reduction** in greenhouse gases (GHG) by the end of 2027, compared to 2019 - SBTi commitment to cap global warming at 1.5 °C
- **15% reduction** in energy consumption between 2029 and 2019 (kWh/VKT)
- **15%** of energy consumption across RATP from renewable energy sources by 2030
- **100%** electric vehicles by 2030 (auxiliary vehicle fleet)

EXAMPLES

- **1st Power Purchase Agreement (PPA)**, a long-term renewable energy purchasing contract that was signed in April 2022 with Urbasolar for a 15-year period. The agreement covers 55 hectares of solar farms in France that produce 65 GWh/year.
- **Solar power plant at the Belliard site** (Paris' 18th "arrondissement"). The bus depot plans to install solar panels on its roof, with which solar energy can be produced to power the site's facilities.
- Deployment of **electric braking systems with energy recovery** across the rail rolling stock fleets (metro, RER, and trams). Energy that is recovered during braking is channelled back into the electric grid to power other nearby trains and machinery (all RER trains and trams are already fitted, and 100% of the metro fleet will be equipped by 2026).

Purchasing as a lever for decarbonisation

- Road map for the decarbonisation of our purchasing policy ;
- **100%** of procurement briefs to factor in environmental aspects by the end of 2025 ;
- **70%** of purchases to be made from SBTi-committed or equivalent suppliers by 2027.

Investments

RATP pledges €2 billion yearly on investments across the Group. Environmental assessments are conducted for projects that exceed €15 million. Investments are a means to support and accelerate the ecological transition.

EXAMPLES

- **The Bus2025 programme**, which was financed by Île-de-France Mobilités, with support from the European Commission, aims to convert the RATP bus fleet to electricity and biomethane by 2025. As at the end of 2024, GHG (greenhouse gas) emissions from bus traction fell by 40%, compared to 2015, amounting to 115,000 tonnes of CO2 avoided.
- **Dynamic smart charging** is an advanced technology that charges equipment during specific hours when energy prices are at their lowest, and when charging generates the least carbon. This innovative technology was used on 700 buses in 2025.



CLIMATE CHANGE: ANTICIPATION FOR MORE EFFICIENT ACTION



RATP Group command centre © Bruno Marguerite

As a key player in sustainable mobility, RATP Group is at the forefront of climate change adaptation. While public transport constitutes one of the major solutions to reducing greenhouse gas emissions, transport networks are directly exposed to the consequences of climate change, which continue to grow in frequency and intensity.

RATP GROUP, THE WORLD'S THIRD-LARGEST PUBLIC TRANSPORT OPERATOR, SERVING CLIENTS IN OVER 780 CITIES, BEARS AN ESSENTIAL RESPONSIBILITY: GUARANTEEING RELIABLE, SAFE, AND ACCESSIBLE TRANSPORT SERVICES, EVEN AMID FAST-CHANGING CLIMATE CONDITIONS. TO EFFECTIVELY DO SO, THE COMPANY HAS TO ANTICIPATE, ADAPT, AND ACT.

IDENTIFIED CLIMATE RISKS

THREE MAIN WEATHER PHENOMENA CURRENTLY THREATEN
THE TRANSPORT INFRASTRUCTURE IN THE ÎLE-DE-FRANCE REGION



FLOODS

RATP's underground network, which extends over 467 km across the Île-de-France region, is particularly vulnerable to flooding. A swelling Seine or Marne River could bring a large swathe of the Île-de-France region to a standstill.



HEATWAVES

Extreme heat can affect numerous components across the network, from expanding tracks and sagging overhead cables, to malfunctioning air conditioning systems, lifts, and passenger information devices.



TORRENTIAL RAINS

Localised episodes of heavy rainfall, which have become increasingly frequent, may cause occasional, sudden flooding of stations or tracks.

ADAPTING FOR BETTER RESILIENCE

Other weather phenomena, such as droughts, forest fires or landslides that can be attributed to the expansion and contraction of clay soils, are also being closely monitored. While extreme weather events have yet to be commonplace in the Île-de-France region, they may become actual threats in the future. Given these challenges, RATP Group has positioned

climate change adaptation at the core of its strategy. This involves thinking differently about how the company conducts some of its business activities, through the design of new infrastructure, as well as the maintenance, operation, and management of stations. With these measures, the Group aims to guarantee service continuity for current and future passengers.

A RESPONSIBLE, PROACTIVE APPROACH

RATP Group is taking the lead in a world where the climate is changing much faster than expected. By factoring climate scenarios into its project schedules, and by implementing sound measures on the ground, the Group is striving to provide effective solutions to climate-related challenges.

These efforts stem from the Group's public interest mission of allowing everyone to continue travelling under optimal conditions.

More sustainable water management

RATP has been developing a project to reuse water from underground seepage, and from vehicle washing, which is recovered from its dewatering stations.

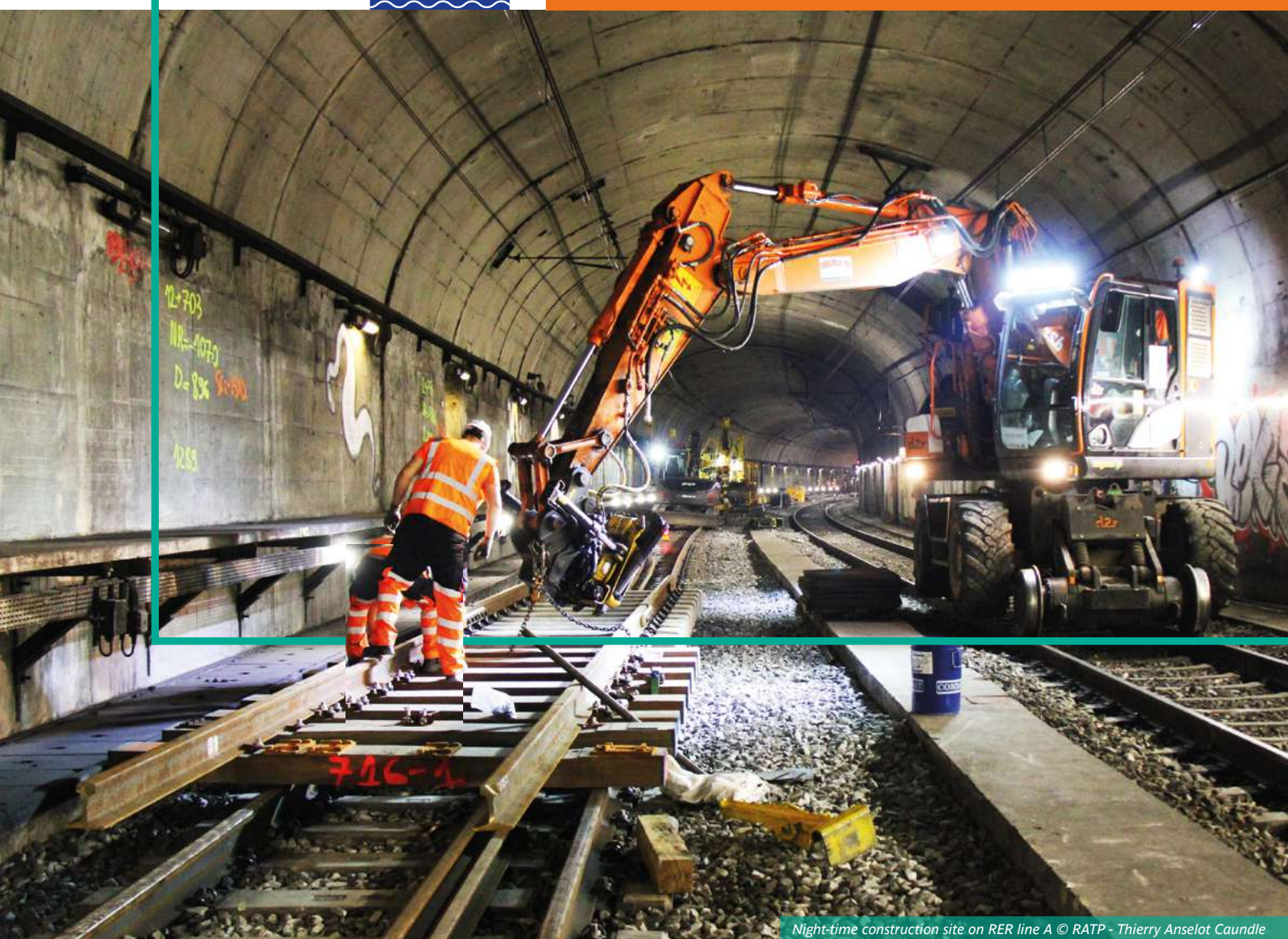
This water, which is currently released back into the sewage system, can be recovered for uses that exclude drinking (cleaning and watering), thereby contributing to the more responsible management of water, a resource that is becoming increasingly vital.

- RATP has pledged to reduce its GHG emissions by 43% between 2019 and 2027.
- A journey by rail emits 50 times less GHG than a similar journey by private car.
- 75% of buses in Paris and its inner suburbs are set to be air conditioned by 2026.

» To counter climate change, public transport is part of the solution.

2

HOW RATP ADAPTS ITS APPROACH TO THE CLIMATE EMERGENCY



Night-time construction site on RER line A © RATP - Thierry Anselot Caundle

Reducing emissions, adapting its infrastructure, and improving risk management: RATP Group's comprehensive strategy.

ÎLE-DE-FRANCE MOBILITÉS IS UPGRADING ROLLING STOCK, WITH RATP'S SUPPORT, FOR MORE COMFORTABLE RIDES DURING HEATWAVES, WITH ON-BOARD AIR CONDITIONING AND REFRIGERATED AIR.

A COORDINATED STRATEGY TO COMBAT GLOBAL WARMING

REDUCING OUR CARBOON FOOTPRINT, ANTICIPATING IMPACTS, AND PROTECTING OUR NETWORK

In response to accelerated climate change, the Group is deploying a global, coordinated strategy that relies on two additional levers: **mitigating** the effects of global warming, by reducing greenhouse gas emissions, and **adapting** to impacts that have already affected its infrastructure and activities.

Among its mitigation measures, RATP has for several years committed to decarbonising its mobility offering and facilities, notably by implementing the use of clean energy sources, energy conservation measures,

and more efficient equipment. These efforts are part of a trajectory that is aligned with national and European climate goals.

However, mitigation measures are no longer enough. This is why RATP has commissioned climate change adaptation works over the past several years, in addition to sector-based approaches that have already been implemented with regard to flood prevention, and heatwaves. RATP will finalise a **comprehensive climate change adaptation (CCA) plan** by the end of 2025.

THE PLAN IS BUILT ON FOUR AREAS OF ACTION



Closer monitoring of weather events:

Alert systems have been improved to anticipate risks. Assessments are then conducted following each intense episode of heat or rain, to include new vulnerabilities that have been identified in the CCA plan.



Long-term vulnerability studies:

Based on climate scenarios in the French benchmark warming trajectory for climate change adaptation (TRACC), RATP has been assessing the exposure of its network along various timelines (2030, 2050, and 2100). RATP contributes to regional projects that are spearheaded by the Île-de-France regional council, alongside Île-de-France Mobilités, SNCF and Institut Paris Région, to map vulnerable areas in the Île-de-France regional rail network, in order to improve their resilience.



Stronger prevention resources:

Adapting maintenance programmes, deploying smart sensors on sensitive structures, changing infrastructure design rules, and others. These measures facilitate more granular monitoring, and shorter response times, notably by leveraging IoT (Internet of Things).



Business continuity plans:

RATP has established specific systems to manage floods, heatwaves, and droughts. During heavy rainfall, lower-speed itineraries are activated across the RER network in the most high-risk areas, to guarantee passenger and staff safety.

This is an integrated approach that is based on anticipation and effective measures, with which RATP is able to guarantee the durability of its public service missions, while countering new climate change challenges responsibly and meticulously.

EXEMPLE

Since 2018, RATP and Paris Habitat have been channelling heat from the metro line 11 tunnel to heat a building on rue Beaubourg in Paris. This initiative helps meet approximately 35% of the building's heating needs, thereby reducing energy consumption and greenhouse gas emissions.

Three levers to closely track climate change-related risks

Monitoring, adaptation, and crisis management



Flood risk protection drill around an air event at Balard metro station © Denis Sutton

1 KEEPING A CLOSER, TARGETED WATCH ON EXTREME CLIMATE EVENTS

To anticipate high-risk weather phenomena, RATP's command centre ensures continuous operational foresight across the RATP-operated network in the Île-de-France region. This strategy pools alerts from Météo France, Vigicrues (flood warning service), as well as data gathered from strategic local stakeholders, such as the SIAHYV (intermunicipal water management union of the Yvette river valley). With the monitoring system, specific internal resources that are adapted to the nature and intensity of the events can be dispatched in real time.

Monitoring patrols are stepped up during the summer to detect the effects of heatwaves on infrastructure, notably elevated tracks. Relying on smart sensors that are installed throughout the network, track temperature is measured in real time and integrated into an internal predictive model. Once critical thresholds are reached (57°C and above in the case of tracks), various measures are implemented, such as reducing train speeds, in order to guarantee rail safety.

- » 292 dewatering stations
- » Temporary water barrier systems (Floodsax™ flood protection sandless sandbags)

2

ADAPTING INFRASTRUCTURE ASSETS AND DESIGN PRINCIPLES IN STRUCTURED PHASES

Infrastructure upkeep and maintenance have also been adapted to new climate-imposed constraints. To prevent warping and deterioration due to heatwaves, embedded preventive maintenance systems on railway tracks and rolling stock have been enhanced. Inspections on ventilation systems and cooling circuits, and cleaning operations on radiators and filters, are now some of the standard procedures that are carried out prior to heatwaves.

RATP Group is simultaneously upgrading its technical benchmarks and specifications to factor climate projections into new designs. The goal: building more resilient infrastructure, starting now.

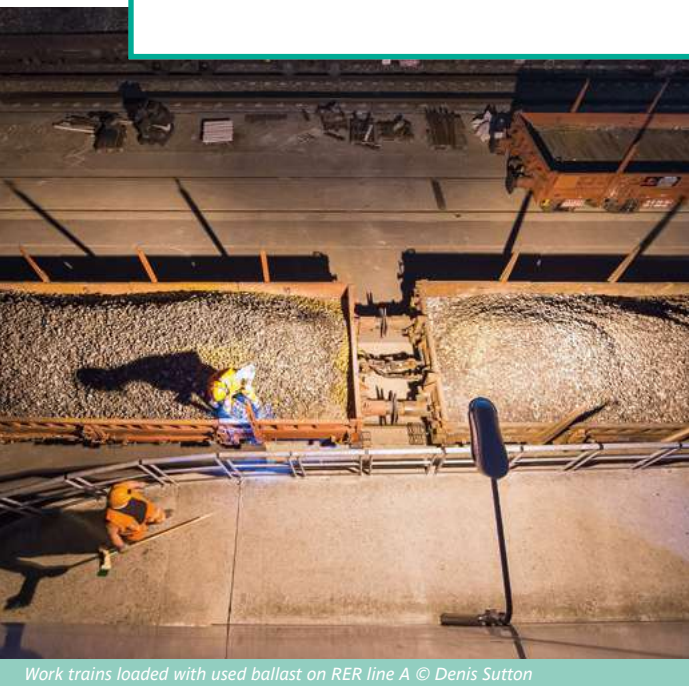
3

DEPLOYING ROBUST CRISIS MANAGEMENT, AND TESTED BUSINESS CONTINUITY PLANS

As anticipation is only part of the solution, RATP has established a crisis management organisation that provides functional support to the RATP command centre, which is in a position to coordinate a series of relevant measures when major events occur.

Since 2012, a business continuity plan has been designed to specifically cater to flood risks. The plan relies on local input gathered in each department, which is then supplemented by technical solutions. Some of the solutions that have been deployed include automatic lift pumps in stations, temporary flood protection equipment such as FloodSax™, which are water-activated sandless sandbags that redirect runoff water, thus making it possible to keep stations open and safe.

From the beginning of the 2000s, RATP has also committed to a wide-ranging flood risk protection plan. Currently, between 425 and 430 potential water ingress points have been identified, and flood protection mechanisms are progressively being installed at these sensitive zones when water levels rise. The effectiveness of the plan is tested every year in the form of drills in real-life situations, and coordinated with the main urban operators (SNCF, Enedis, RTE, and the City of Paris).



Work trains loaded with used ballast on RER line A © Denis Sutton

Ingenious water ingress management in underground networks

Even before the metro network was built, the engineers knew that runoff water would be a continuous issue. Water that manages to seep into the network is funnelled through a system of pipelines beneath train tracks, and into one of 292 dewatering stations, some of which are located 40 metres underground. Water is pumped into them, before being released into the sewer network, the Seine River, or into canals. Case in point: the Palais-Royal station close to the Seine River - it notably protects metro lines 1 and 7, which are particularly prone to flooding.

Air conditioning and refrigerated air on more rolling stock models.

Upgrades and comfort, with minimal energy consumption



Tram line T2 maintenance and depot site at Issy-les-Moulineaux © RATP - Hamdi Chref

Given rising temperatures and frequently recurring heatwaves, Île-de-France Mobilités, with RATP's support, is upgrading rolling stock at a quicker pace to provide passengers with more comfortable journeys. One of the main solutions is the more widespread installation of refrigerated air and air conditioning systems on metros, RER trains, buses, and trams across the RATP-operated Île-de-France Mobilités transport network.

PROGRESSIVE NETWORK UPGRADES

Various generations of rolling stock continue to coexist on the network, as part of a phased upgrading programme. The newest trains are already equipped with efficient refrigerated ventilation or

mild air conditioning systems, while the oldest train models have yet to keep up with the effects of climate change.



Refrigerated ventilation, makes indoor air cooler than the outdoor temperature by several degrees, providing a feeling of comfort, while consuming less energy than standard air conditioning.



Air conditioning, which is more powerful, actively regulates indoor temperature, based on a target set point, regardless of outdoor conditions.



METRO

A TURNING POINT WITH THE NEW MF19 ROLLING STOCK

- Currently, **44%** of the metro fleet is equipped with refrigerated ventilation, notably on lines 1, 2, 5, 9, 11, and 14, and on some line 4 trains across the RATP-operated Île-de-France Mobilités network.
- Other older train models provide natural or forced ventilation, which has become increasingly insufficient during heatwaves.
- The deployment of **future MF19 rolling stock** has been scheduled between 2025 and 2036. These trains will provide refrigerated ventilation, and they are set to represent a major breakthrough for the network.



RER

A VERY WELL-EQUIPPED NETWORK

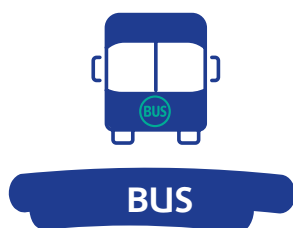
- **93%** of the RER fleet is equipped with refrigerated ventilation on the RATP-operated Île-de-France Mobilités network.
- On **RER line A**, MI09 and MI2N train models; already have refrigerated ventilation, while on **RER line B**, MI79 and MI84 models have been refurbished (84% of the fleet) to provide it as well.
- **MI20** rolling stock, which will run on RER line B between 2027 and 2032, will also include refrigerated ventilation.



TRAM

EQUIPPING ALL LINES

- All tram lines operated by RATP (T1 to T10) on behalf of Île-de-France Mobilités **are currently air conditioned**, providing comfortable temperatures on board.



BUS

FAST UPGRADING PROCESS

The energy transition of the bus fleet (**Bus2025** programme financed by Île-de-France Mobilités, with support from the European Commission) includes the wide-scale installation of air conditioning:

- In **2020**, only **5%** of buses were air conditioned.
- In **2024**, the percentage rose to **40%**, or approximately 1,900 buses.
- The goal is to air condition **75%** of the bus fleet in Paris and its inner suburbs by **2026**.

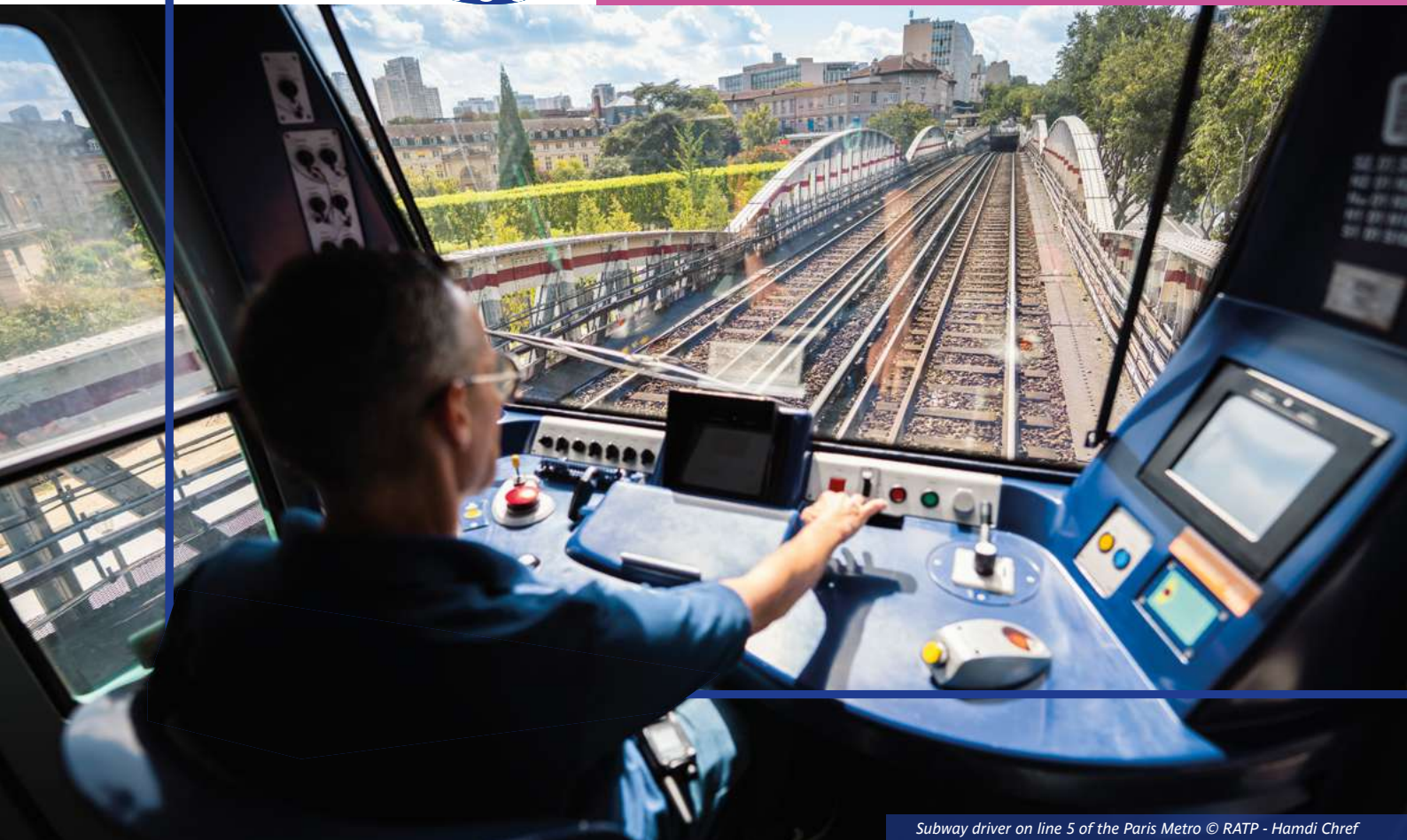
AIMING FOR SUSTAINABLE PASSENGER COMFORT

The process of enhancing these vehicles simultaneously meets two requirements: guaranteeing passenger comfort despite the changing climate, while curbing energy consumption through adapted

technology. The transformation is in line with RATP's commitment to resilient, sustainable mobility that caters to passengers' needs.



PROTECTING OUR STAFF DURING HEATWAVES



Subway driver on line 5 of the Paris Metro © RATP - Hamdi Chref

RATP Group is adapting its staff members' working conditions to cope with heatwaves, by implementing specific measures that are tailored to each profession, in order to protect staff health, and improve the quality of life at work.

GIVEN THE GROWING FREQUENCY AND INTENSITY OF CLIMATE CHANGE-DRIVEN HEATWAVES, RATP IS STEPPING UP ITS EARLY INTERVENTION SYSTEMS TO PROTECT THE HEALTH AND WELL-BEING OF ITS STAFF. THESE ADAPTATION MEASURES HAVE BEEN DESIGNED TO MEET THE SPECIFIC REQUIREMENTS OF VARIOUS PROFESSIONS, WHILE GUARANTEEING PUBLIC SERVICE CONTINUITY UNDER OPTIMAL SAFETY CONDITIONS.

SPECIAL CONDITIONS FOR BUS DRIVERS...

Bus drivers, who are particularly vulnerable in their glass-paned driver's cabins, benefit from a dedicated system that will be activated as soon as the first signs of a heatwave start to show. Notably, under the system:

- **Drivers are allowed to wear pants that can be turned into bermudas**, and female drivers are allowed to wear wraparound skirts, in addition to their uniforms.
- **Bottles of cold water, and water fountains are provide** at terminuses to keep hydrated.
- **Turnaround times are adapted**, to give drivers time to freshen up.
- **Break times are extended** during heatwaves.

These measures aim to prevent risks that are associated with high temperatures, while maintaining high service quality.

...AND TRAIN DRIVERS

Climate change adaptation is a collective duty. At RATP, it also involves protecting staff, who are at the forefront, providing mobility services to Île-de-France residents every day.

Their safety, health, and working conditions are at the core of our commitment to building a resilient, responsible organisation.

Similar systems have been set up for drivers and station staff members on the rail network. Driver's

cabins, some of which have yet to be air conditioned, are being closely monitored: once certain thresholds are exceeded (between 25°C and 30°C), "heat relief" will be organised, allowing drivers to take longer breaks, and drive for shorter periods, if necessary.

Station staff members also benefit from a system that includes extended breaks, water distribution, and water coolers. Air conditioning and cooling systems at staff areas are regularly monitored and maintained to ensure their proper operation.



TUL network in Laval © Sylvain Malmouche

4

SUPPORTING REGIONS: A CORE COMMITMENT IN RATP'S MISSION



Electric bus at Place de la Nation © RATP - Estelle Revesche-Pucharski

RATP Group assists regions in their climate change adaptation measures, by catering its services to specific needs, and cooperating with local stakeholders.

CLIMATE CHANGE IS A GLOBAL CHALLENGE WITH LOCAL REPERCUSSIONS, IN THE FORM OF FLOODS, HEATWAVES, EXTREME WEATHER EVENTS, AND MORE. REGIONS ARE AT THE FOREFRONT, ALONGSIDE ESSENTIAL PUBLIC SERVICES. AT RATP, WE BELIEVE THAT CLIMATE CHANGE ADAPTATION CANNOT SUCCEED WITHOUT FORGING STRONG REGIONAL TIES. THIS IS WHY A MAIN PILLAR OF OUR CLIMATE STRATEGY INVOLVES PROVIDING REGIONS WITH NECESSARY SUPPORT.

BUILDING RESILIENCE IN REGIONS

Our mission reaches beyond passenger transport, as it is part of a global resilience approach that notably includes an ambitious policy that fosters sustainable housing. Public service continuity, even during a climate crisis, is a priority. By anticipating vulnerabilities on our infrastructure, and by factoring climate risks into our projects and operations, we help to develop robustness in the regions that we serve.

Our commitment is also demonstrated through close collaboration with other regional players. Partnering with entities such as RTE, Enedis and local authorities, we focus on protecting energy supply to our networks and strengthening coordination to manage major climate events. Working in synergy results in a collective, efficient response to the challenges of climate change adaptation.

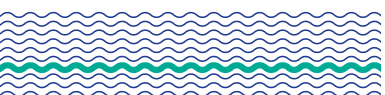
CONCRETE, INNOVATIVE SOLUTIONS

Backed by our technical expertise and presence in numerous regions, we play an active role in implementing concrete, innovative solutions. This ranges from energy optimisation across our infrastructure, to the design of more flexible services that can withstand climate change.

Supporting regions also means listening to their concerns, building together with them, and innovating as a team. This is RATP Group's vision for a more resilient, united, and sustainable future.

EXAMPLES

- **Support from Île-de-France Mobilités and local authorities for the development of BRT routes in suburban areas, to better serve the Île-de-France region and local authorities, and adaptation of itineraries to serve sensitive areas that are vulnerable to climate events, and neighbourhoods that are undergoing an energy transition.** Five BRT routes currently operate in the Île-de-France region: TVM (Croix de Berny - Saint-Maur), route 393 (Thiais - Sucy-Bonneuil), T Zen 1 (Sénart - Corbeil), 91-06 (Massy - Palaiseau RER - CEA Saclay), and 91-10 (Orly Airport - Gare de Saint-Quentin-en-Yvelines - Gare Routière des Prés). The goal is to reduce individual car use, and improve public transport accessibility.
- **Partnerships with regions in sustainable urban projects** that are based on a common eco-design framework, and integrate various environmental themes, similarly to the Clichy-Batignolles eco-neighbourhood in Paris (integration of a clean tram line, and low-carbon infrastructure). For over 30 years, RATP Group subsidiary RATP Solutions Ville has been developing an urban integration policy for its industrial sites, which has given rise to real estate operations that are both bold and innovative from an architectural and technical standpoint.
- **Trialling innovative solutions** with local authorities, such as Saint-Denis, in which RATP is collaborating with the city to trial lighter-coloured flooring on pavements close to stations, to reduce the number of urban heat islands. Trials have also been conducted in Paris, where RATP partners with the city to participate in projects to introduce greenery in stations, such as Bel Air station on metro line 6.
- **Leveraging energy resilience in regions**, as is the case with the local energy storage and production micro-network project in Vitry-sur-Seine, in association with Enedis, the city, and social landlords. Through the project, RATP infrastructure (depots and trams) is powered as a priority, with the possibility of extending energy supply to municipal facilities during energy crises.
- **Metro line 15 on the Île-de-France Mobilités network**, which has been designed to meet high climate resilience standards: ventilated structures, materials that are resistant to heatwaves, and backup power supply systems.



» **RATP is working towards a more resilient, united, and sustainable future.**

5

PREVENT, INFORM, AND RAISE AWARENESS



Staff in green vests at Gare de Lyon station - © RATP - Hamdi Chref

The Group is tackling climate change by protecting passengers during heatwaves, and by educating its employees on the challenges involved in climate change.

AS RATP GROUP IS AWARE OF THE CLIMATE EMERGENCY, AND OF THE COMPANY'S ESSENTIAL ROLE IN THE ECOLOGICAL TRANSITION, IT IS TAKING EFFECTIVE ACTION TO ANTICIPATE AND MITIGATE THE IMPACTS OF CLIMATE CHANGE ON ITS NETWORKS, PASSENGERS, AND EMPLOYEES. COMMITTED TO A PROACTIVE APPROACH, THE GROUP IS DEPLOYING NUMEROUS MEASURES TO PREVENT, INFORM, AND RAISE AWARENESS.

PREVENTING ENERGY SHORTAGES: A COLLECTIVE COMMITMENT

On 11 October 2022, RATP signed the **EcoWatt** charter, which is a scheme that is coordinated by RTE and ADEME to contribute to the stability of the national grid. During shortages on the network, RATP pledges to postpone the charging of electric buses and service vehicles to as late as possible, switch off

advertising display screens in RER and metro stations, and share EcoWatt alerts with passengers through its communication channels, notably the Bonjour RATP app. These simple but effective actions are part of a collective effort to achieve energy efficiency.

BETTER RELIEF FOR HEATWAVES: TARGETED MEASURES

While heatwaves are occurring with greater frequency, RATP is taking action to keep the general public comfortable and in good health. The company continues to **deploy water fountains**, with currently **over 90 fountains installed across the RATP-operated Île-de-France Mobilités network, at stations that include Auber, Nation, and Châtelet**. Through RATP's partnership with water utility company Eau de Paris, commuters can also look up [ratp.fr](https://www.ratp.fr) to find the closest public fountains.

Every summer, **250 "gilets verts" (green-vested staff)** are dispatched to back up teams in stations, to provide information and assistance to Île-de-France commuters. When a heatwave plan is activated, RATP distributes cartons of water and folding fans at 24 key points across the network, in addition to broadcasting safety messages in partnership with Santé Publique France. When a train is evacuated, specific protocols are also followed to ensure that passengers receive water quickly.



Passengers during the Paris 2024 Olympic Games © Marin Driguez / Agence VU' / RATP

TRAINING AND PROTECTING EMPLOYEES

RATP Group employees are at the forefront to counter the effects of climate change, which is why the company has implemented measures to guarantee their safety. Every year, the Group tests its **flood risk protection plan**, which includes setting up protective barriers at metro entrances in flood-prone areas, and mobilising staff, who are provided with equipment, training, and accommodation, if necessary, for the fastest response.

Training is also a central pillar: following the creation of the **Académie de la transition écologique** (ecological transition academy), RATP wishes to give its employees the right keys with which they can factor in climate concerns as part of their duties.

By 2028, the goal is to raise awareness among the Group's **71,000 employees** with regard to environmental concerns. Some have even gone one step further, by volunteering as hosts of **Fresque du Climat** workshops, training their own colleagues on climate change.

71,000

Group employees
will be trained on
climate concerns
by 2028.



CLIMATE CHANGE ADAPTATION: A GLOBAL CHALLENGE FOR THE GROUP



Riyadh metro operated by RATP Dev © RATP Dev/RCRC

RATP Group subsidiary RATP Dev deploys climate resilience solutions that are adapted to specific local environments in numerous cities worldwide. Casablanca, Cairo, and Riyadh illustrate this ability to adapt to extreme climate risks, thereby providing a continuous feedback loop that enriches Group expertise in climate change adaptation.

With a presence in close to one hundred cities worldwide, RATP Group implements practical solutions to strengthen resilience on its transport networks, by relying on local regulatory frameworks, specific contractual requirements, and a risk culture that is adapted to each region.

These operations are led by RATP Dev, the subsidiary that is dedicated to the development and operation of networks outside the Île-de-France region. Approaches that have been fine-tuned in several large international cities provide inspiring examples of adaptation.



CASABLANCA

ANTICIPATING HEATWAVES AND URBAN FLOODING

In Casablanca (Morocco), the subsidiary RD Casablanca operates two tram lines, and a rapid transit bus route. To cope with exceptional precipitation, and temperatures that can sometimes exceed 45°C, several preventive and technical measures have been implemented:

- Closer monitoring of equipment during extreme heatwaves.
- Targeted drainage in identified flood-prone areas.
- Technical systems that have been strengthened to prevent incidents in high-risk sectors.
- Inclusion of the tram network in the municipal climate risk management plan, in close collaboration with local authorities.



RIYADH

A METRO NETWORK DESIGNED TO WITHSTAND MAJOR CRISES

In Riyadh (Saudi Arabia), CAMCO (Capital Metro Company) has implemented an ISO-certified business continuity management plan that guarantees the metro network's resilience against all crisis categories. The plan comprises:

- A Gold-Silver-Bronze tiered command structure for swift response time based on the severity of incidents.
- The identification of critical activities and recovery goals.
- A dedicated crisis centre, secure messaging for real-time alerts, and emergency funding mechanisms.
- Regular drills simulating real-life situations to test and fine-tune procedures.



CAIRO

AN INTEGRATED APPROACH TO CLIMATE AND SOCIETAL RISKS

In Cairo, subsidiary RATP Dev Mobility Cairo (RDMC), which oversees metro line 3, and the light electric rail (LRT), has built its business continuity plan on four areas of focus: prevent, prepare, respond, and recover. This system takes into account:

- The potential impacts of floods, sandstorms, and heatwaves.
- Emergency plans for key infrastructure (stations, depots, and more).
- Management of social and geopolitical risks (cybersecurity, local tensions, and more).
- Preparation of a Flooding Management Plan, a comprehensive operational and strategic guide to preventing and managing floods.

AN INTEGRATED APPROACH TO CLIMATE AND SOCIETAL RISKS

These are only a few examples illustrating RATP Group's skills in developing climate resilience solutions that are adapted to the configurations of each region. By combining innovation, anticipation, and local cooperation, the Group is actively participating in the transition to sustainable, reliable transport networks that are ready to meet 21st century climate challenges. This expertise, which has been tested internationally, is a precious resource in supporting regions across France in their individual approaches to climate change adaptation.

7 PREVENTING FLOODS, PROTECTING THE NETWORK



Porte de Clichy station on metro line 14 © RATP - Estelle Revesche-Pucharski

Since 2002, RATP has devised a flood risk protection plan to protect its underground networks, notably when the Seine River swells. The system is regularly reviewed and enhanced, in line with a global strategy fostering climate change adaptation and investment, to guarantee service quality on Île-de-France public transport.

TO GUARANTEE THE RESILIENCE OF ITS INFRASTRUCTURE, RATP HAS BEEN EQUIPPED WITH A FLOOD RISK PROTECTION PLAN SINCE 2002, MAKING THE PLAN ONE OF THE FIRST TO HAVE BEEN IMPLEMENTED BY A TRANSPORT OPERATOR. THE PLAN AIMS TO PROTECT UNDERGROUND NETWORKS FROM WATER INGRESS DURING MAJOR FLOODING, NOTABLY FROM THE SEINE RIVER.

The plan, which was approved by the Île-de-France regional prefect in 2015, and is regularly updated, relies on robust operational mechanisms:

- **430 protection structures** can be erected within four days, with the mobilisation of 900 staff members.
- **Equipment and materials are stockpiled at all times:** 24,400 concrete blocks, 530 tonnes of mortar, 105 concrete mixers, 850 m² of marine plywood, as well as 1,500 beams, and bags of materials, ready for use.
- **Defined alert thresholds** progressively activate the implementation of protection measures, as soon as the Seine River reaches a depth of 6.60 metres at Pont d'Austerlitz bridge.

Every year, RATP tests its flood risk protection plan under real-life conditions, to guarantee the responsiveness of its teams, the reliability of equipment, and thorough knowledge of instructions. The goal is not to continue operations during major floods, but to protect technical installations, and enable swift service recovery once conditions permit. With an initial investment of €6 million, and

subsequently €300,000 yearly, the flood risk protection plan represents a solid commitment. Even if the plan catered to an event with a probability of occurring once every 900 years, its profitability and necessity remain indisputable, because every day that the network comes to a standstill results in major economic and social repercussions across the Île-de-France region.

MORE THAN FLOODS: ADAPTING THE NETWORK TO NEW RISKS

RATP thinks forward, and continuously strengthens the resilience of the network that it operates on behalf of Île-de-France Mobilités, to counter the effects of climate change, by:

- **Upgrading flood protection systems** in some connecting corridors (installation of secondary partition doors), to limit the spread of flooding between two lines, for quicker deployment of the systems, and to minimise the number of people required to assemble them.
- **Consolidating rail embankments**, to prevent risks of rainwater runoff.
- **Strengthening pumping systems** in low-lying areas of the metro network.
- **Hardening sensitive soils** (clay and marl) on certain branches of RER line A, to prevent ground shifting due to droughts and heavy rainfall.
- **Adapting real estate property** through the APIEE programme (*Adaptation du Patrimoine Immobilier aux Enjeux Environnementaux*, adaptation of real estate property to environmental challenges), notably to improve staff comfort during climate events.

PUBLIC TRANSPORT AND CLIMATE CHANGE: BEING PART OF THE SOLUTION

By anticipating the effects of climate change, RATP Group is making the resilience of its infrastructure a priority, as public transport simultaneously contributes to climate issues, while being a key component in the solution. Increasing the sturdiness of the network today means guaranteeing the continuity of mobility for everyone, even during extreme climate events.

