



The Grand Paris Express

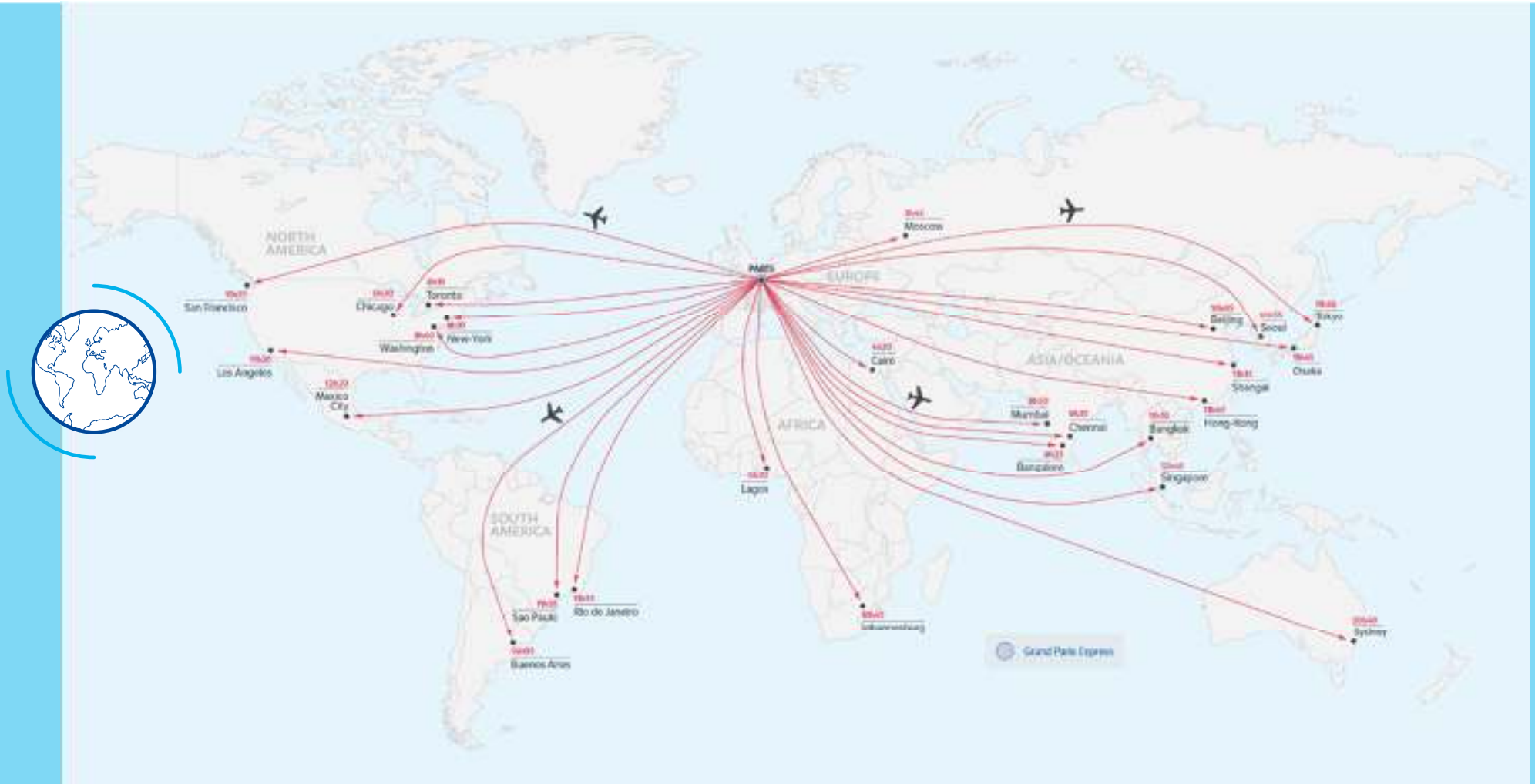


Context





Paris and the world



Paris at the heart of Europe



Grand Paris compared to London and New York



8 600 pop/km²
7 M pop / 861 km²

5 490 pop/km²
8,6 M pop / 1 600 km²

10 194 pop/km²
8,8 M pop / 778 km²

Grand Paris, a leading metropolitan area



In Europe

1st business centre

1st financial marketplace in the eurozone

1st start-up centre

1^{er} employment area



In the world

1st tourist destination

2nd most attractive city

Grand Paris, a leading metropolitan area



Around
€759
Billion GDP

Over
31%
Of French GDP
(for less than 19% of the
population of mainland
France)



1,374,700
companies

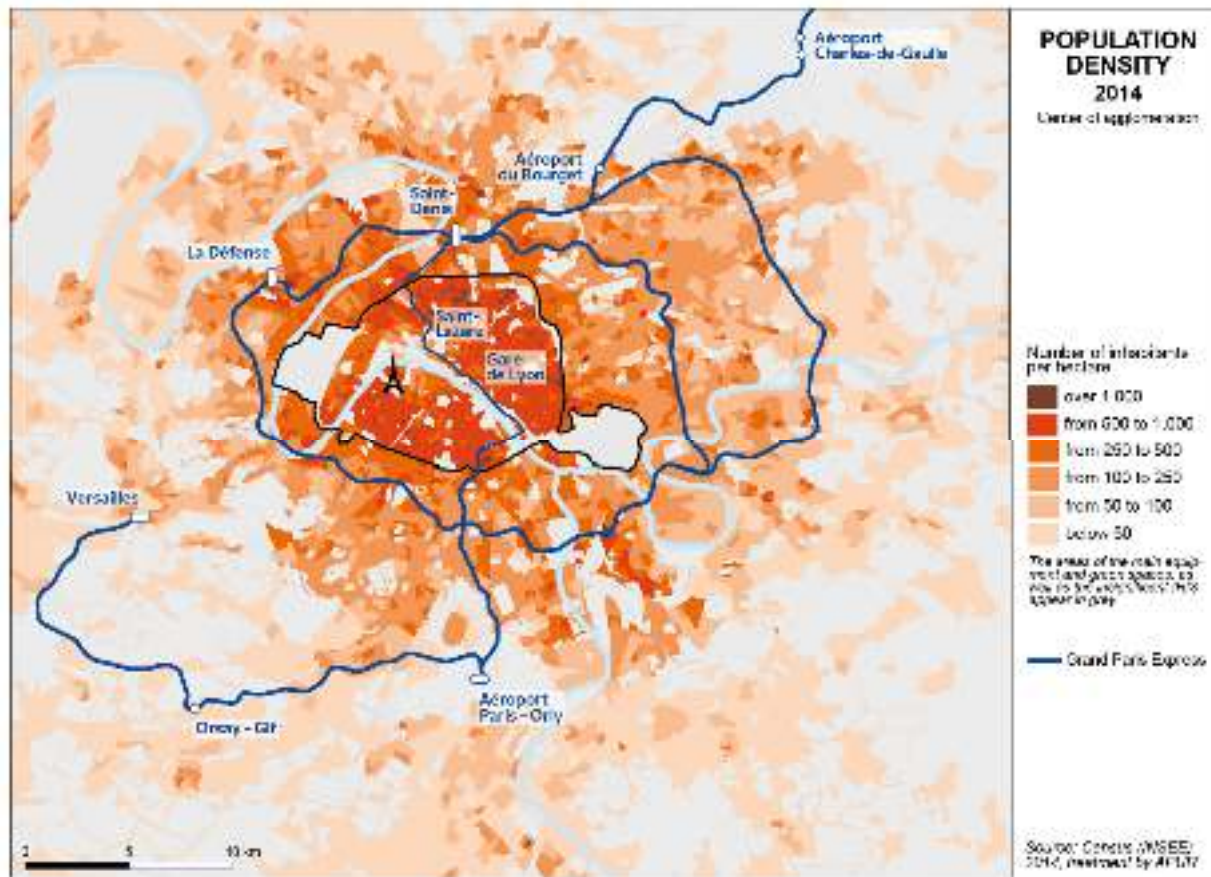


12.3 million
inhabitants

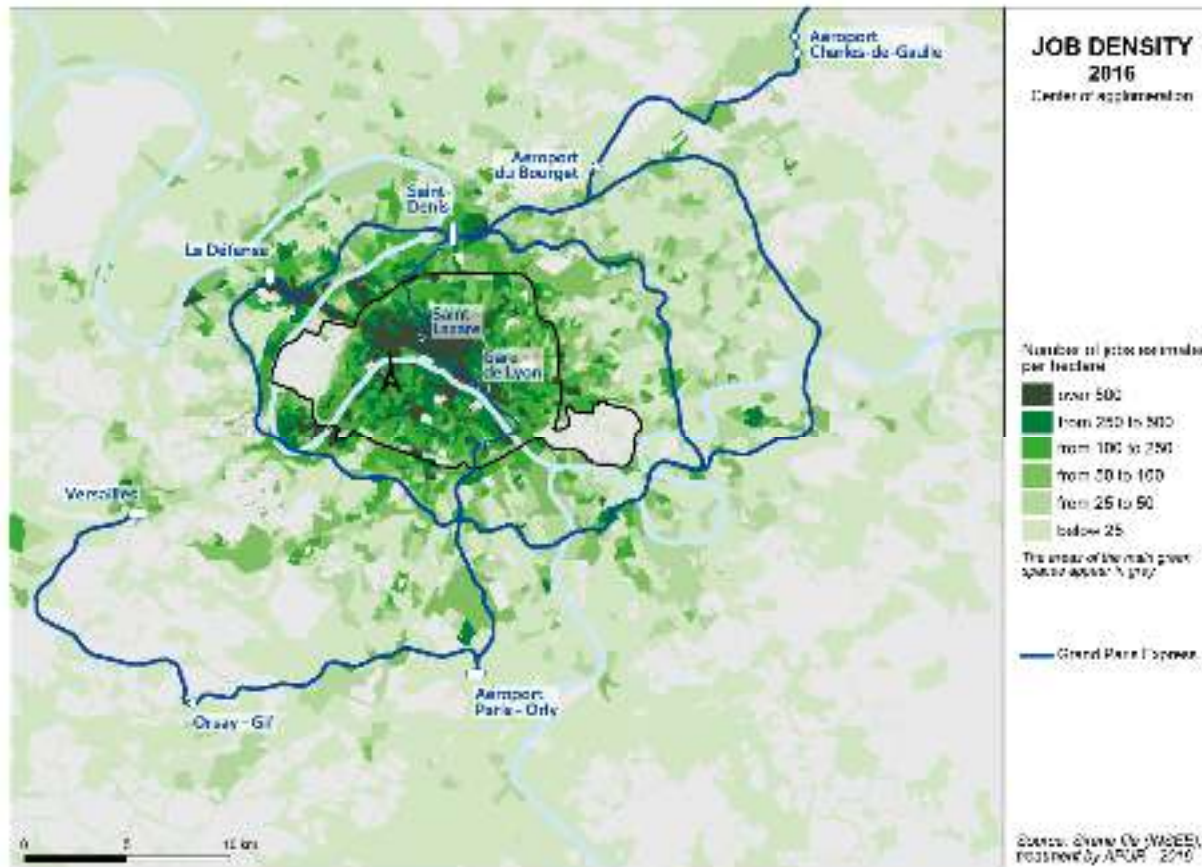
6.4 million
jobs

23%
of jobs in France

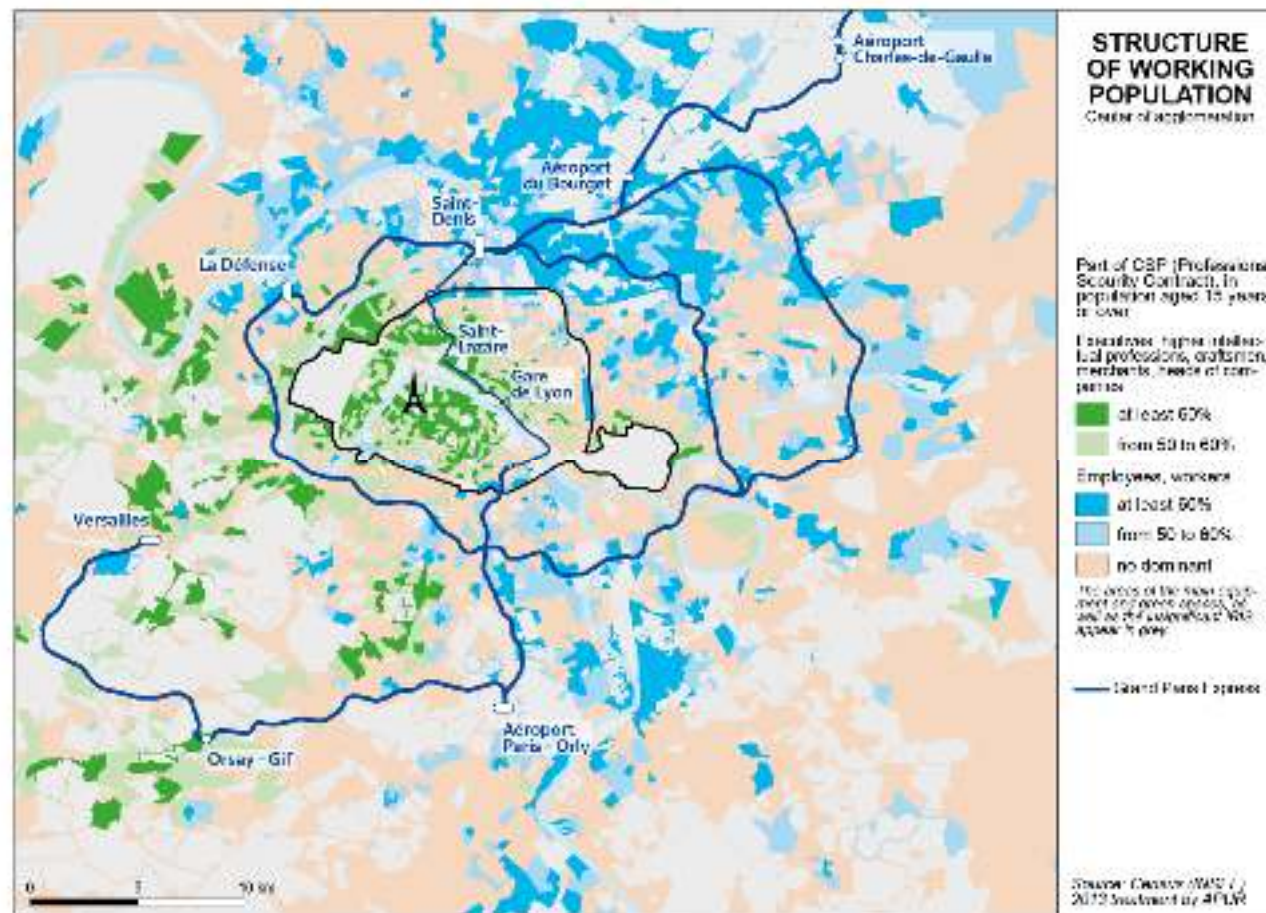
Housing is still concentrated in the central area



Jobs remain concentrated in central Paris and the immediate outskirts

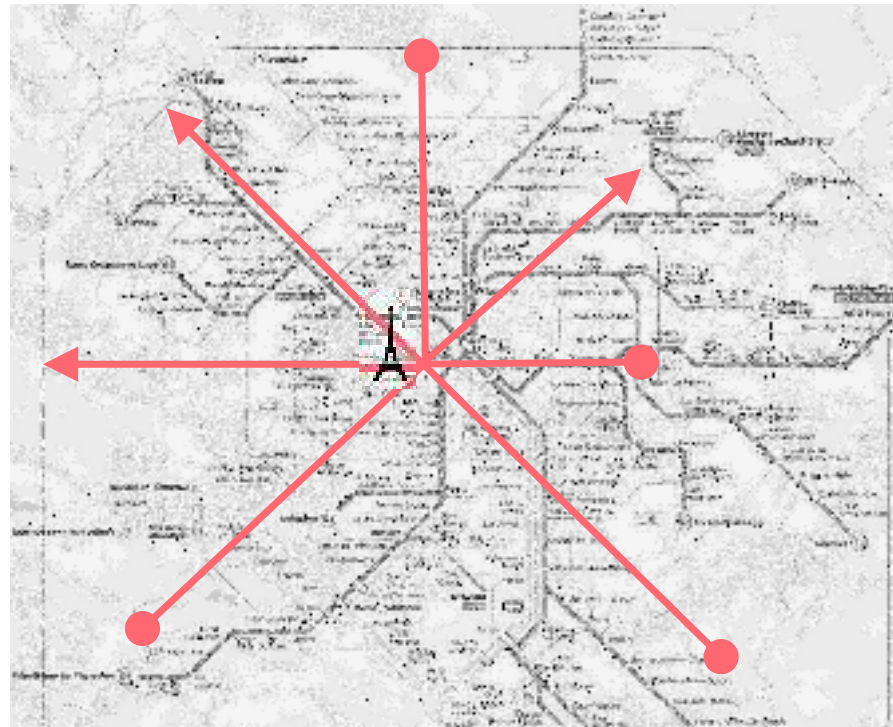


Strong and social division remains



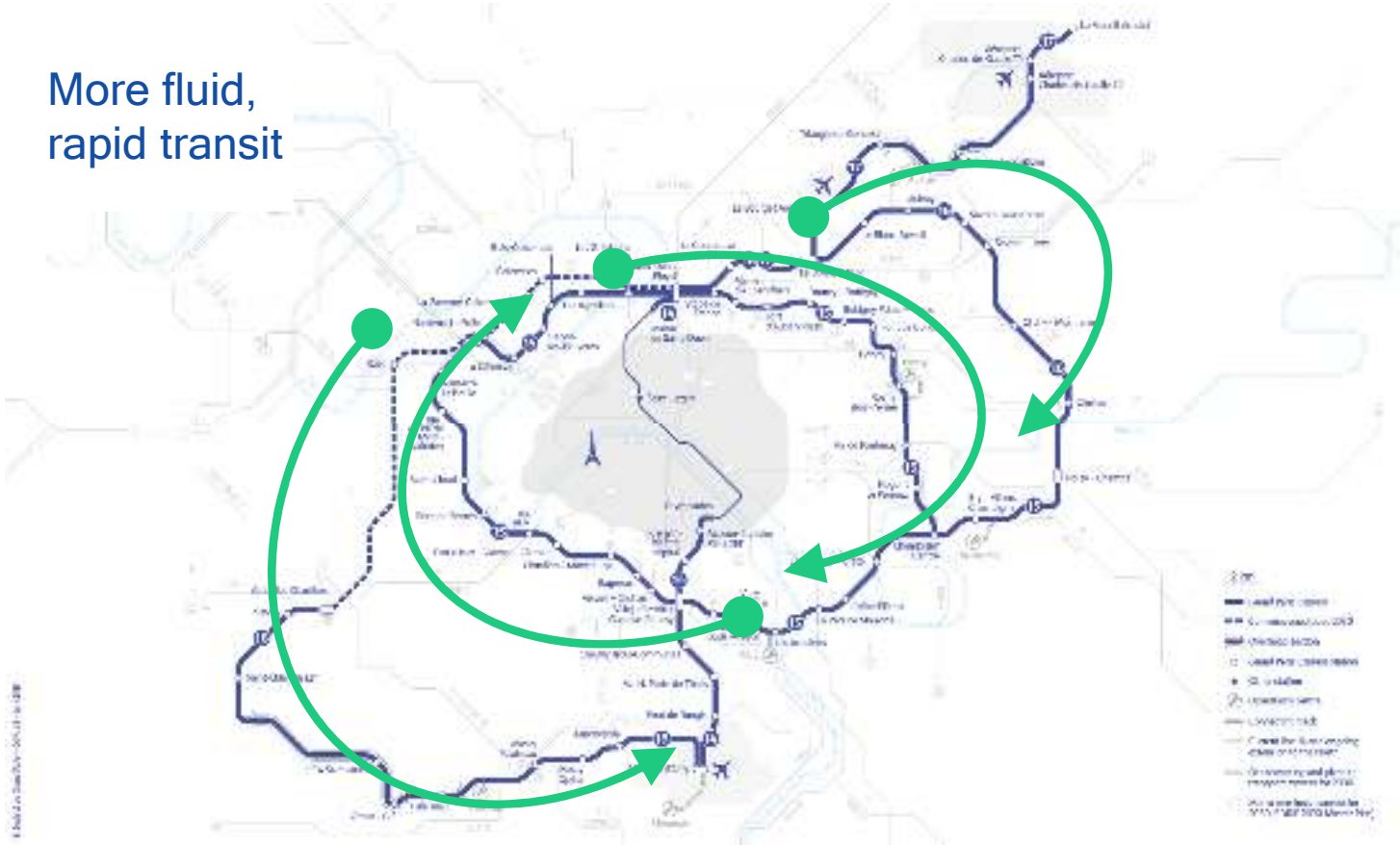
The transport network needs to be rounded out

Travel saturated by having to go through the centre



The answer: build a ring route, the Grand Paris Express

More fluid,
rapid transit



The Grand Paris Express



Grand Paris Express: responding to key issues

Housing shortage

Territorial and social imbalance

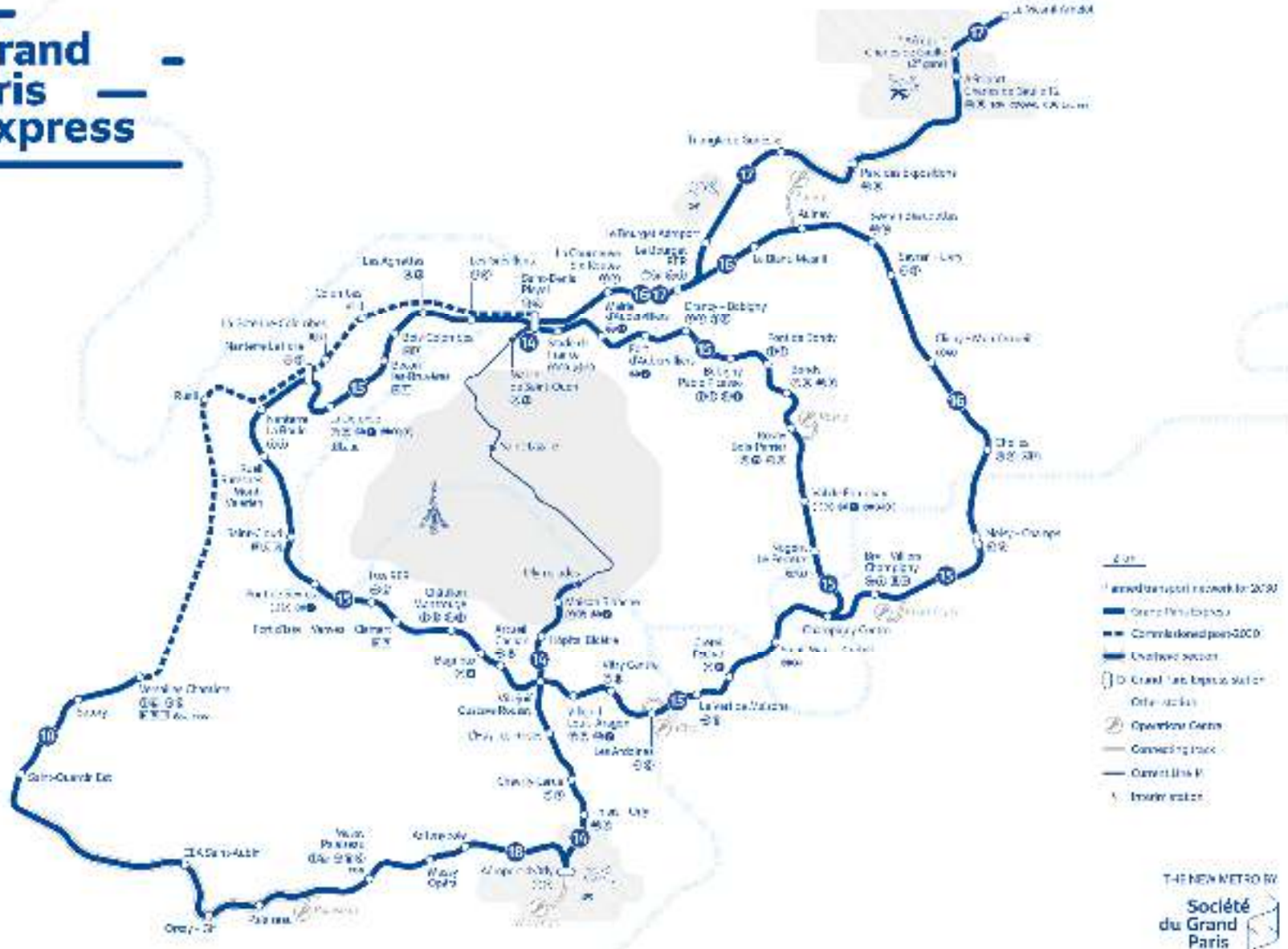
International competition between cities

Pollution

Congested transport infrastructures



Grand Paris express



A project unprecedented in scope

Grand
Paris
express

In figures

68 stations

and 6 technical centres

90%

of network underground

Close to **3 million**

passengers per day

200 KM of lines

added to the existing 200 km in
Île-de-France (metro and RER)

100% accessible

for people with reduced mobility

100% automatic

Guarantee of regular service,
stability, comfort and safety

1 train

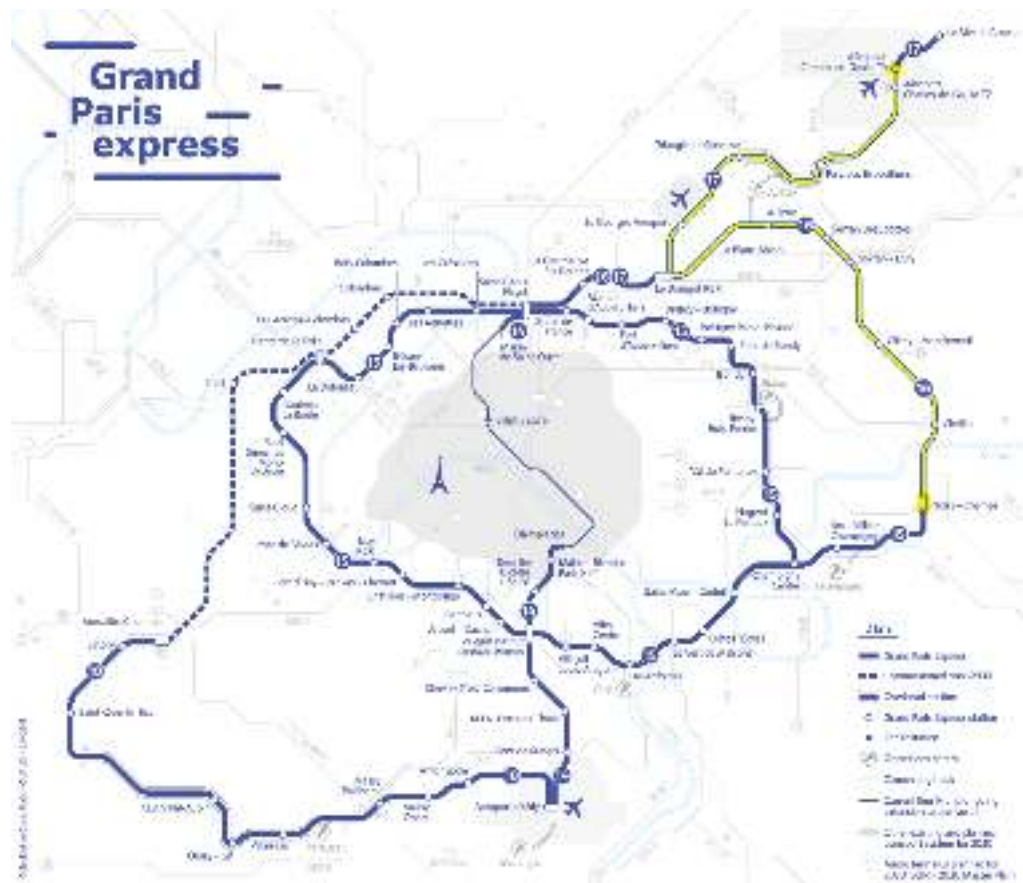
every 2 to 3 minutes

Travelling at a speed between

55 and 65 km/h

on average

A revolution for residential and economic mobility



AÉROPORT
CHARLES-DE-
GAULLE T4



NOISY
CHAMPS

Today

1 h 09



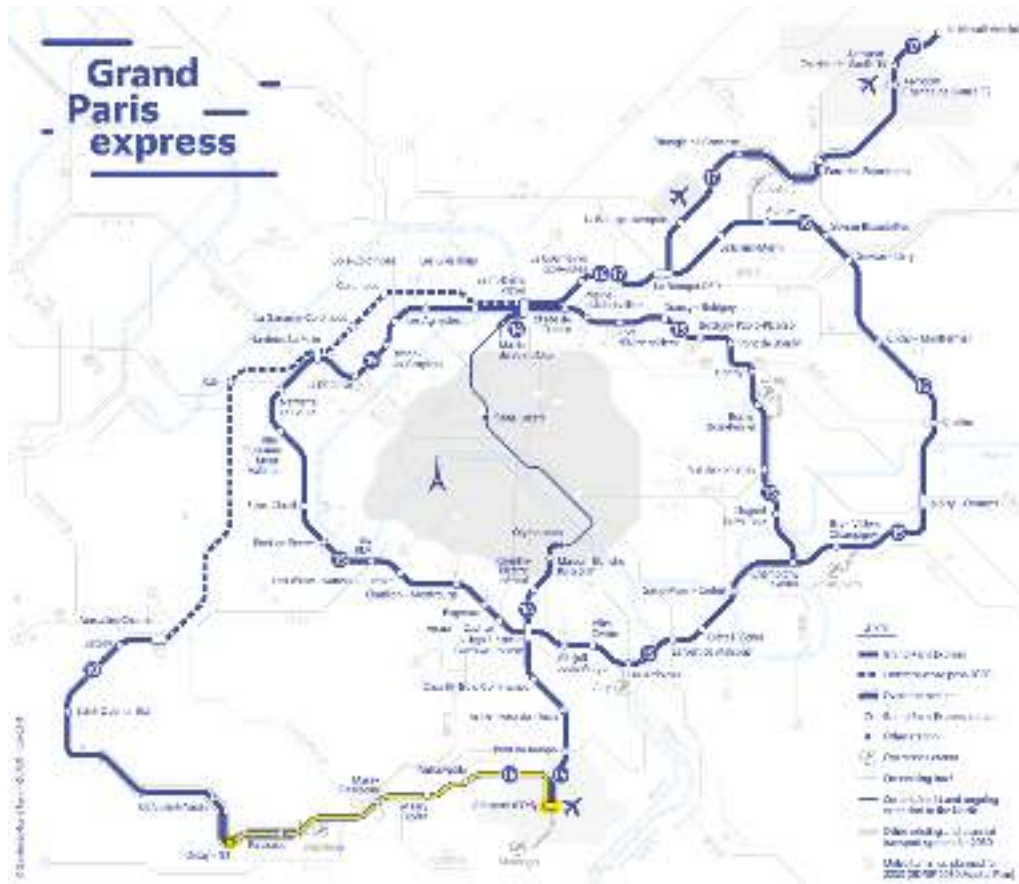
Tomorrow

31 min



Gain
38 min

A revolution for residential and economic mobility



Today
41 min

Tomorrow
15 min

AÉROPORT D'ORLY > ORSAY GIF

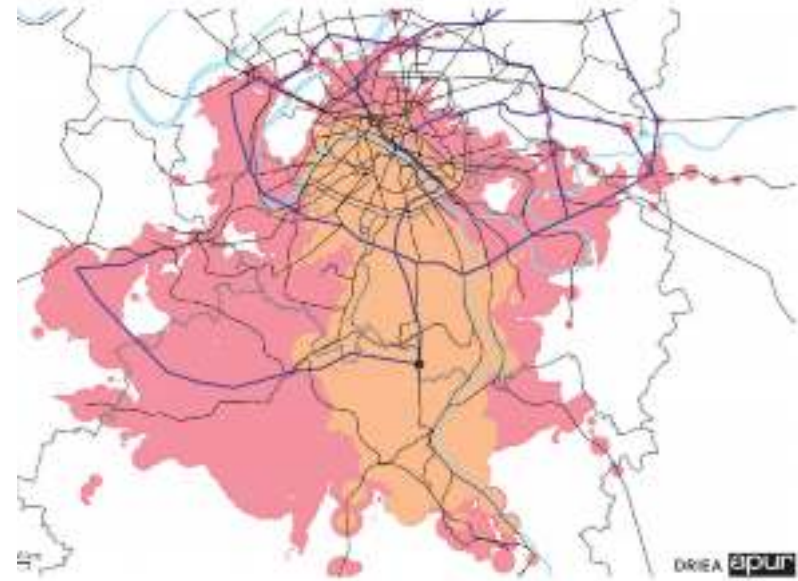


Gain
26 min

Accessibility improvement: a few examples



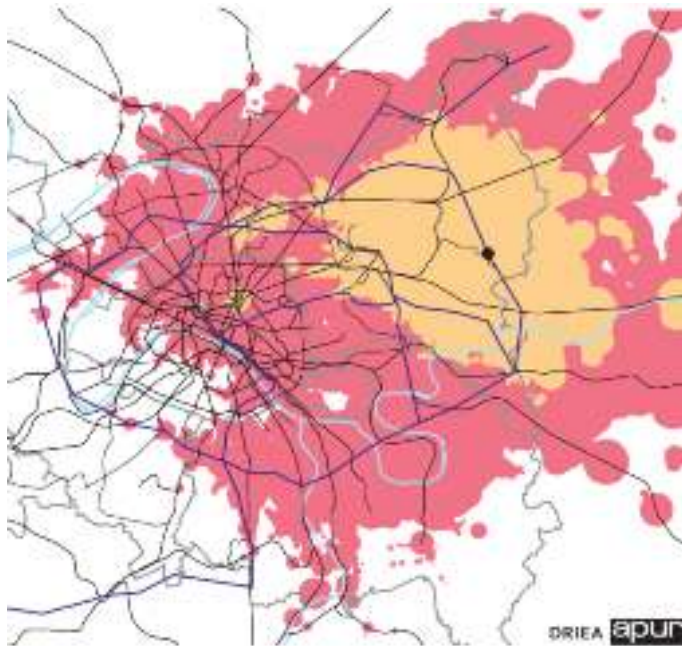
Charles de Gaulle T2



Aéroport d'Orly

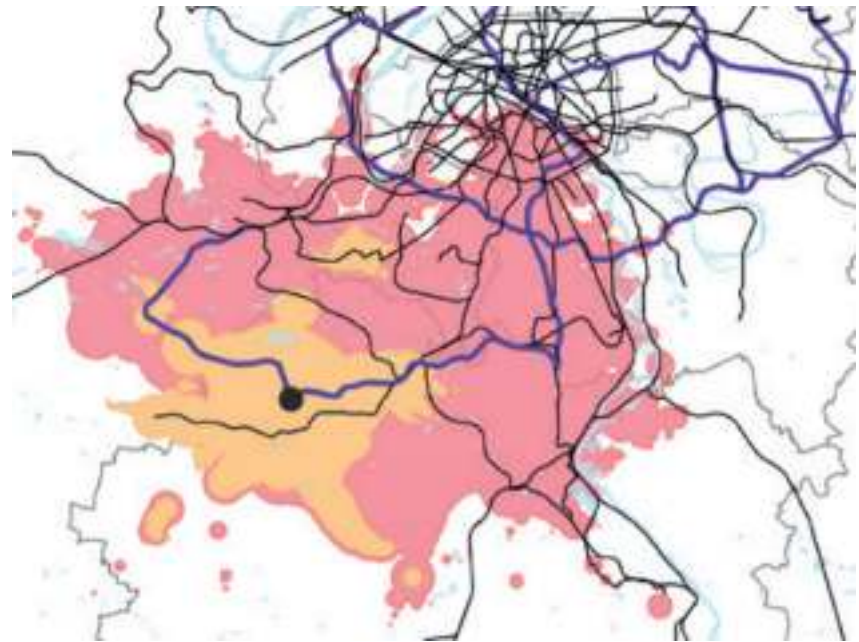
*45 min 2013 (orange)/2030 (red)
(Apur 2017)*

Accessibility improvement: a few examples



Clichy-Montfermeil

*45 min 2013 (orange)/2030 (red)
(Apur 2017)*



Orsay-Gif

The many socio-economic benefits



7 to 8%

Return on investment

€10-20 billion

of growth
(in addition to natural region GNP)

€ 80 billion

of socio-economic benefits

More than

115,000 jobs

Created from the growth generated by the network

On board the future metro



**Automated
trains**

Fully accessible

Internet access

5G and Wi-fi

Secured

**cars and
passenger areas**

Rider comfort

Colour-coded
priority seating.



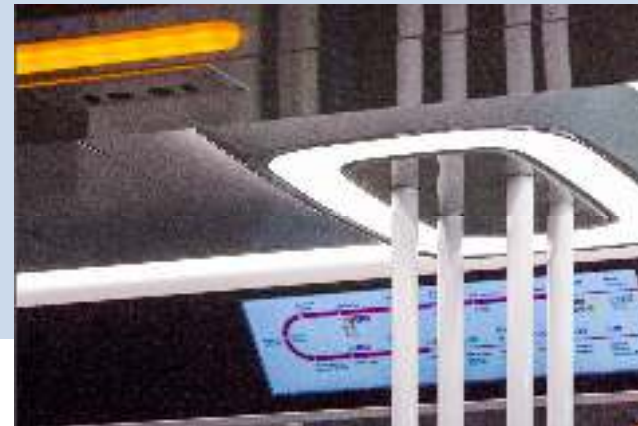
A wide
windscreen for
panoramic
views of the
metro's route.



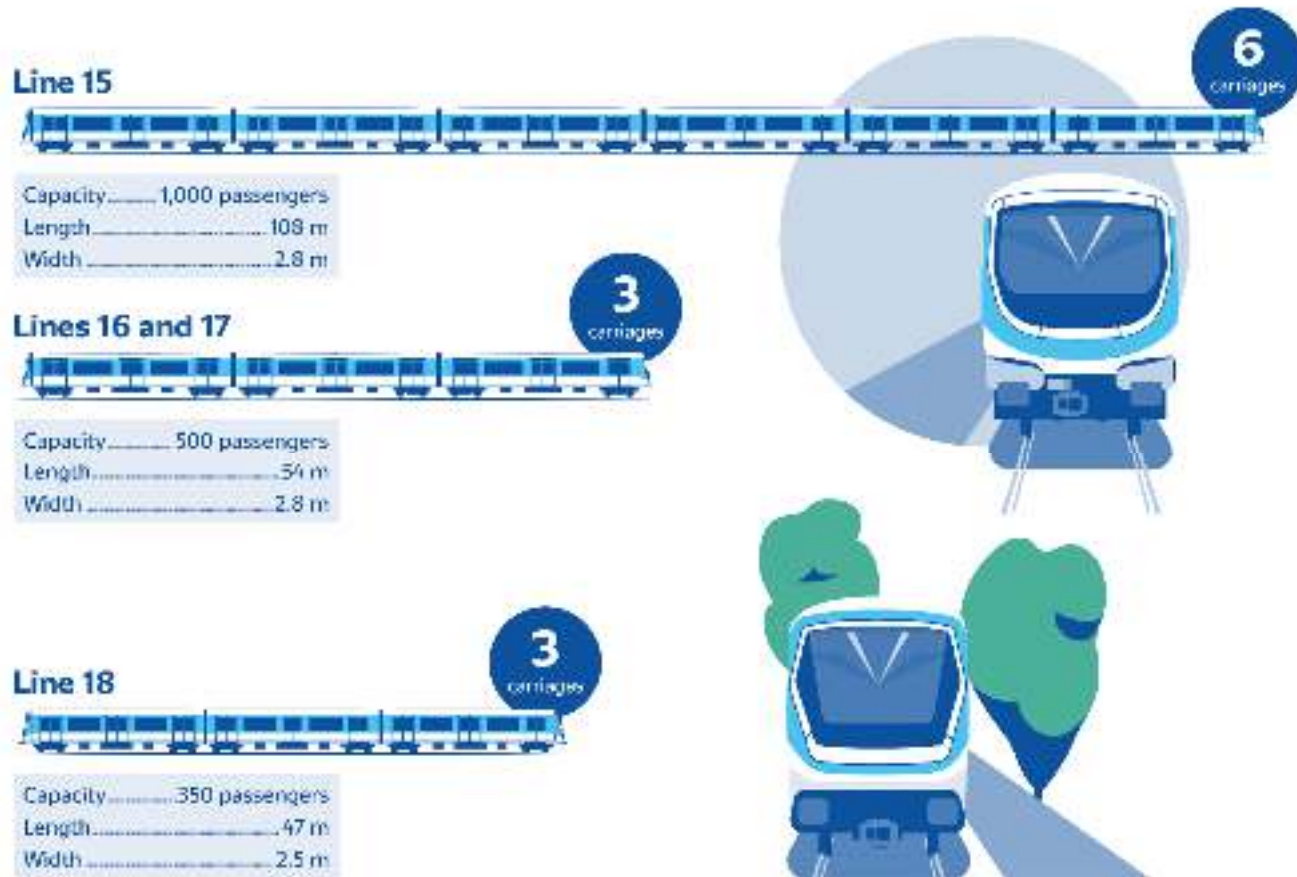
USB ports for
riders.



Extra lighting at
entry points.



Capacity adjusted by metro line



A frequent rapid metro system



Speeds of up to
110 km/hr

1 train every

2-3 minutes

Minimum service intervals of
85-90 seconds

Environmental performance



Energy efficiency

Automated for optimized operation

All-electric service braking

30% energy recovery per braking manoeuvre

100% LED lighting



Better air quality

Electric passenger trains and maintenance vehicles

30-40% fewer particle emissions with electric braking

Concrete slab tracks require less maintenance compared to ballasted tracks because they prevent fine particulates

Tunnels and stations with standalone ventilation and decompression ducts



Quieter and fewer vibrations

Optimized design: tunnel depth, anti-vibration boring machinery, compliance with some of the strictest standards on community disruption

Meticulous tracking: end-to-end route analyses, oversight body, test tracks, confirmed performance

Platform walls with impost blocks creates a physical barrier separating the station platforms from the tracks

Low decibel limits for rolling stock and automated driving



Climate change resilience

Concrete slab tracks resistant to rail expansion

Electrical power supply sized for extreme high and low temperatures and wind resistance

In the operating phase: "heat" tours, clearing brush from tracks, point heaters for operations centres, etc.

Air-conditioned trains



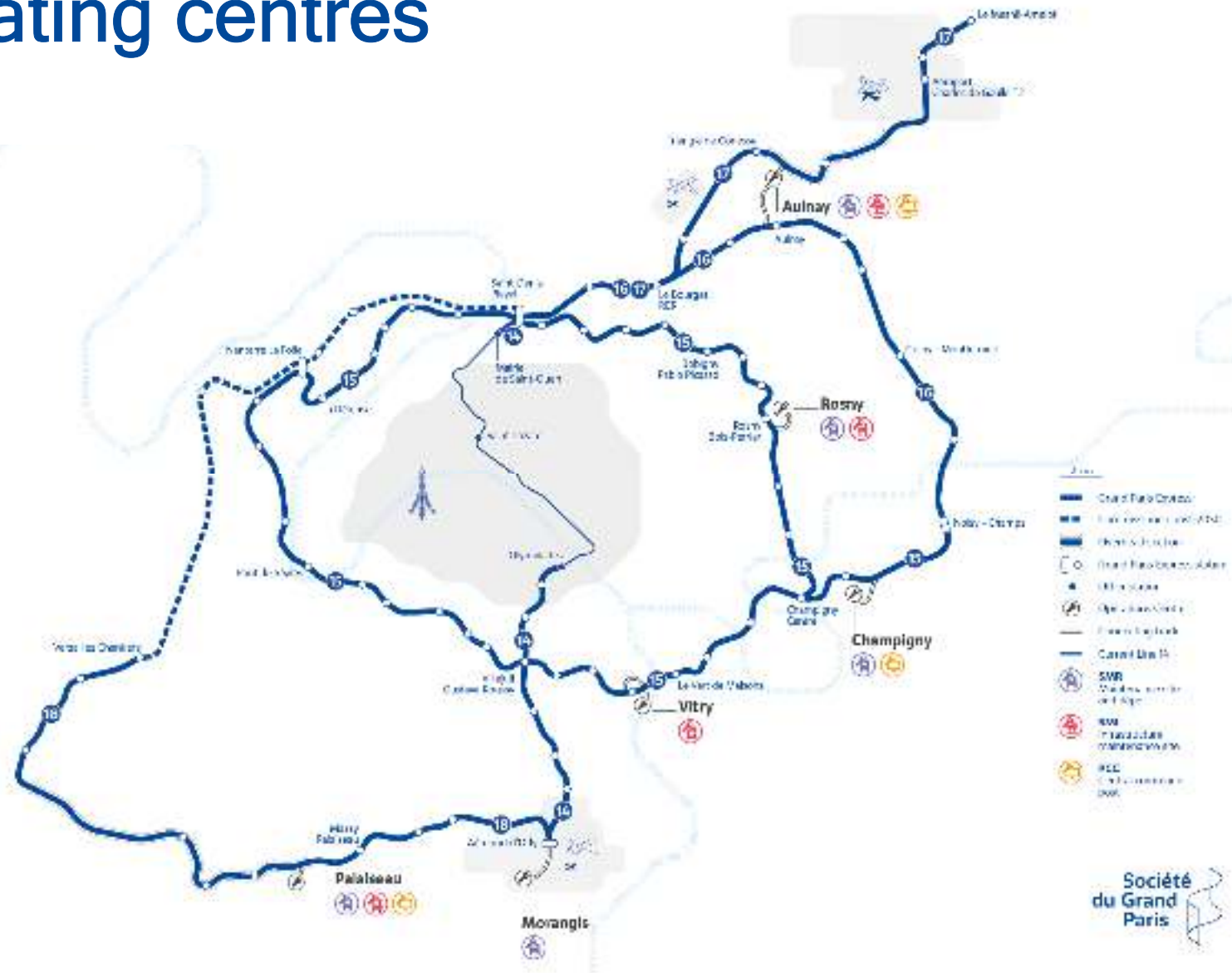
Rolling stock recycling

Train recycling rate: 96%

Train repurposing rate: 98% (same recycling process plus energy generation)

The operating centres

6 operating centres



Operating centres under construction



Aulnay



Champigny



Vitry

Project progress



Work has started



Work has started



94 km dug

35 km
of double-track railways completed

In march 2023

Work has started



15,000 to 20,000 jobs
Per year needed to build the Grand Paris Express



Over
7,769 employees
mobilised in civil engineering



Work has started



5,443 companies

working on the construction sites

Including

4,473 SMEs

Economic footprint as of December 1st 2022

An unprecedented underground adventure

29 tunnel boring machines (TBMs)
christened in January 2023



Breakthrough of the Mireille TBM in Clichy-Montfermeil



Lowering of the Caroline TBM's cutter head in Massy



Breakthrough of the Marina TBM in Créteil l'Echat

Line 15



Villejuif Institut-Gustave Roussy station



Chatillon-Montrouge station



Saint-Maur-Créteil station

Line 16



Le Blanc-Mesnil station



Saint-Denis Pleyel station

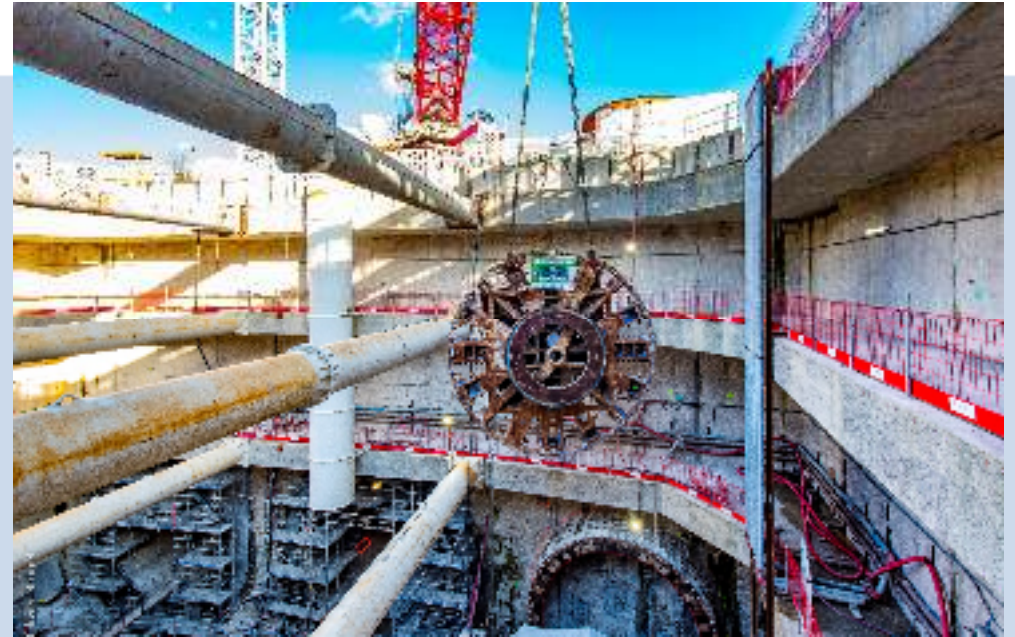


Aulnay station

Line 17



La Courneuve Six-Routes station



Le Bourget RER station

Line 18



Antypole station



Viaduct Palaiseau

Driving employment

Contractual levers in Grand Paris Express contracts have been designed to promote employment and regional development.

CSR clauses for contractors



A reintegration through work clause

At least 10% of the hourly volume is reserved for the long-term unemployed

An employment and training development clause

Transparency of the **employment market** by publishing offers and providing notification of **foreseeable requirements**

An SME clause

20% minimum of the total amount of construction contracts are reserved for SMEs

A social and territorial innovation clause

Development of activities that generate sustainable, inclusive employment around the construction sites and future stations



A city-friendly project



Connecting hubs and accelerating territorial development



Stations built to serve travellers



Efficient, functional stations

- Easy-to-stop
- Welcoming
- Safe
- Fluid
- Easily-accessible



Connected stations

- Digital
- Inter-modal
- Easy



Living environments

- Attractive
- Vibrant
- Practical



Saint-Denis Pleyel
Kengo Kuma & Associates
(Kengo Kuma)



A station for each territory

Stations in city centres

Bagneux



Stations in new urban hubs

Noisy - Champs



Stations as gateways to the city

Orly Airport



The iconic Grand Paris stations

Saint-Denis Pleyel



The architectural diversity of the Grand Paris Express stations



Clichy - Montfermeil station



Orsay - Gif station



Le Bourget
Airport station



Vitry Centre
station

Pont de Bondy

Estimated number of passengers/day	Platform depth	Architect
33,000	44 metres	BIG & Silvio d'Ascia



Villejuif-Institut Gustave Roussy

Estimated number of passengers/day	Platform depth	Architect
102,000	48 metres (L15) 36 metres (L14)	Dominique Perrault Architecture



Saint-Denis Pleyel

Estimated number of passengers/day	Platform depth	Architect
250,000	28 metres	Agence Kengo Kuma & Associates



Parc des Expositions

Estimated number of passengers/day	Platform depth	Architect
12,000	14 metres	Dietmar Feichtinger Architects

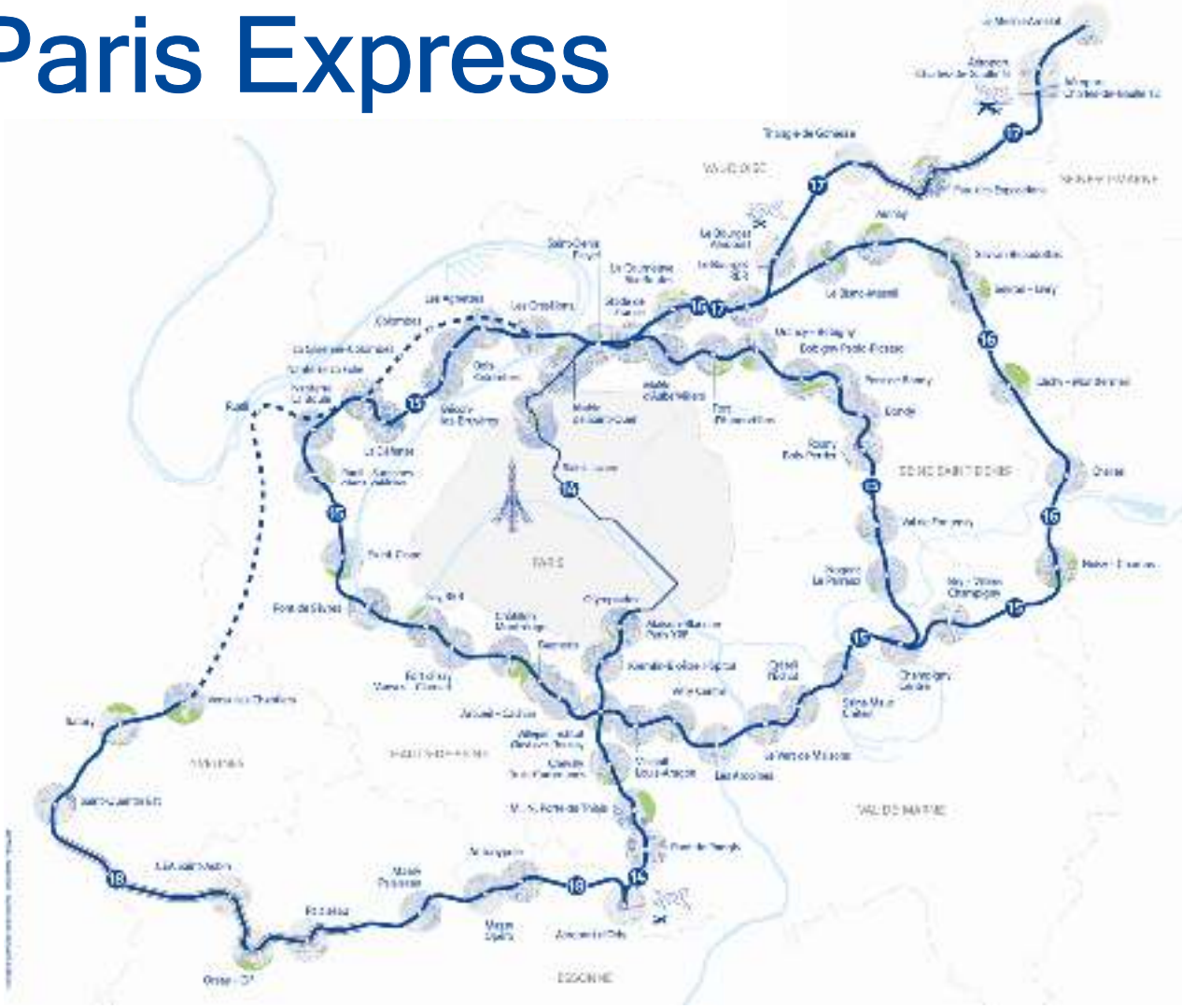


Orly Airport

Estimated number of passengers/day	Platform depth	Architect
95,000	21 metres	François Tamisier et Bernard Barret, Architectes Groupe ADP



Urban development around the Grand Paris Express



140 sq.km
Of new neighbourhoods
 within an 800-metre radius of each station on the rail line - total development of **32 million sq.m** along Grand Paris Express

New look station districts

thanks to Société du Grand Paris real-estate projects

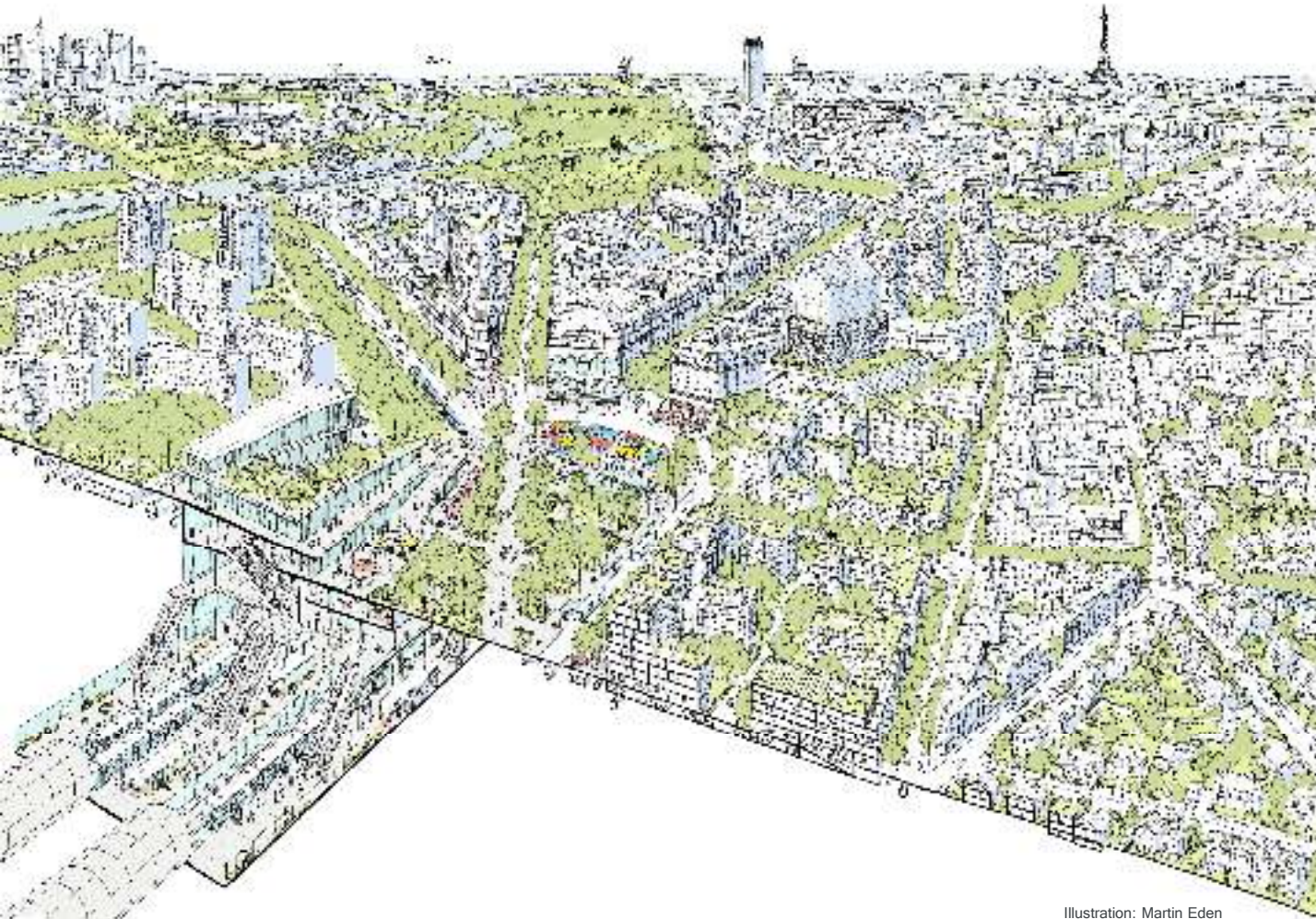


Illustration: Martin Eden

By 2030, **more than 100 projects** to be developed by Société du Grand Paris covering a total surface area of **1 million sq.m**

8,000 homes of various types
almost 60% of development is housing

43,000 sq.m of retail and services
in addition to the 20,000 sq.m inside the stations

380,000 sq.m of offices, logistics and industrial real estate

70% of our projects will be made of bio-sourced materials, including 50% wood

Our environmental and social commitments

30%

public and temporary housing units, including 1% for artists

40%

for open-air spaces like balconies, garden beds, terraces

70%

built with natural materials or geomaterials, including 50% in wood

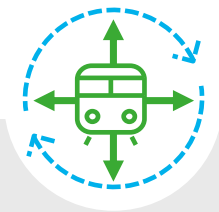
10%

of commercial space designated for the non-profit sector



New public spaces

Since 2015, Société du Grand Paris and Île-de-France Mobilités have been supporting the construction 68 hubs around Grand Paris Express stations.



Hubs covering a 300 m area around each station.



In total, **nearly 480 hectares of public space** redeveloped (pavements, roads, forecourts, tree-lined areas, car parks etc.), reflecting the scale of the Grand Paris Express

Priority to green transport (cycling, pedestrians etc.)

Opportunities for people to leave their car at home.

A major project to drive environmental progress



A very strong environmental ambition from inception of the project



More sustainable cities

140 km² of development potential

Re-organise the city on the city to limit urban sprawl

70% of real estate projects built using bio- or geo-sourced material



Active and decarbonised mobility

Study of hubs around stations

Priority given to active mobility (pedestrians, cyclists, etc.) as alternatives to cars



Energy efficiency

Use the most advanced technologies to limit the energy consumption of transport



Circular economy of waste materials

45 million tonnes of waste materials

70% of waste will be recovered

Rigorous traceability



Protect natural environments

100% of constructions sites have received environmental requirements

20 environmental mitigation and forest offset sites in Île-de-France

Ecological monitoring of mitigation measures for 30 years



Reduce CO₂ emissions

90% of the Grand Paris Express uses low-carbon concrete

15% of earth transported via barge or railway

Since 2020, a clause for 100% low-carbon concrete

A project to advance the ecological and energy transition



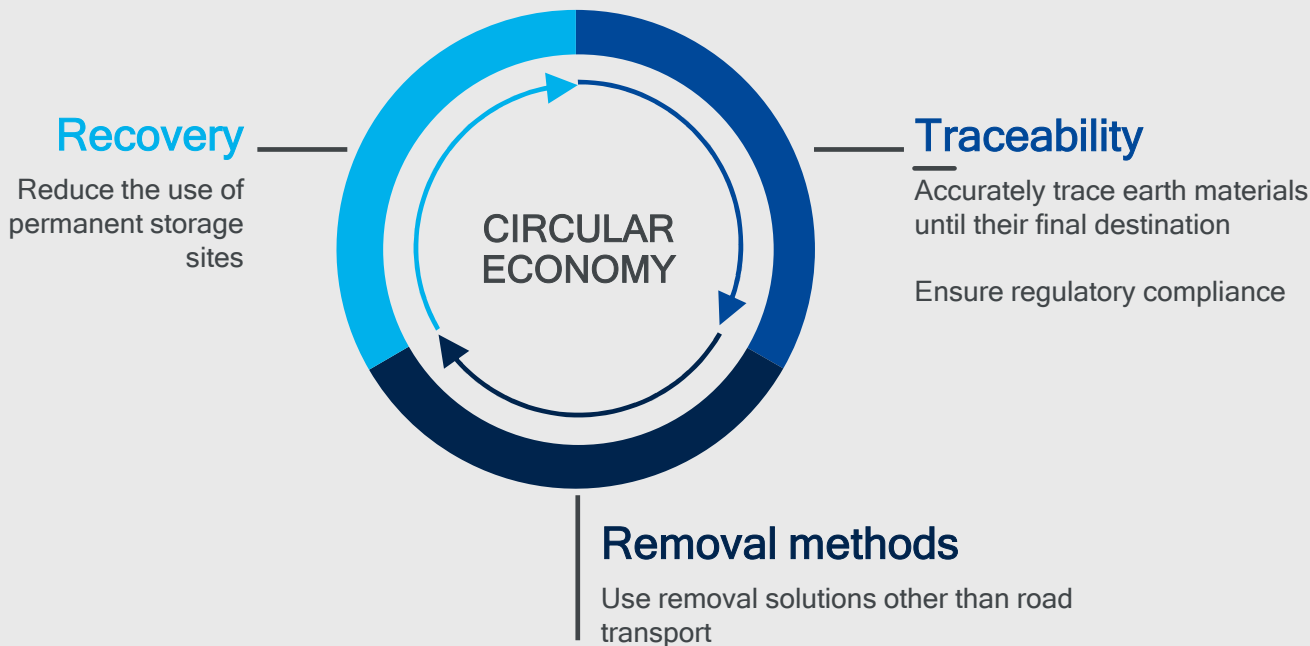
-14 million
of CO₂
equivalent tonnes by 2050


36% thanks to reduced car use


64% by renovating neighbourhoods around stations

CO₂ emissions reduction **3 to 5 time greater** than the emissions generated by the Grand Paris Express project

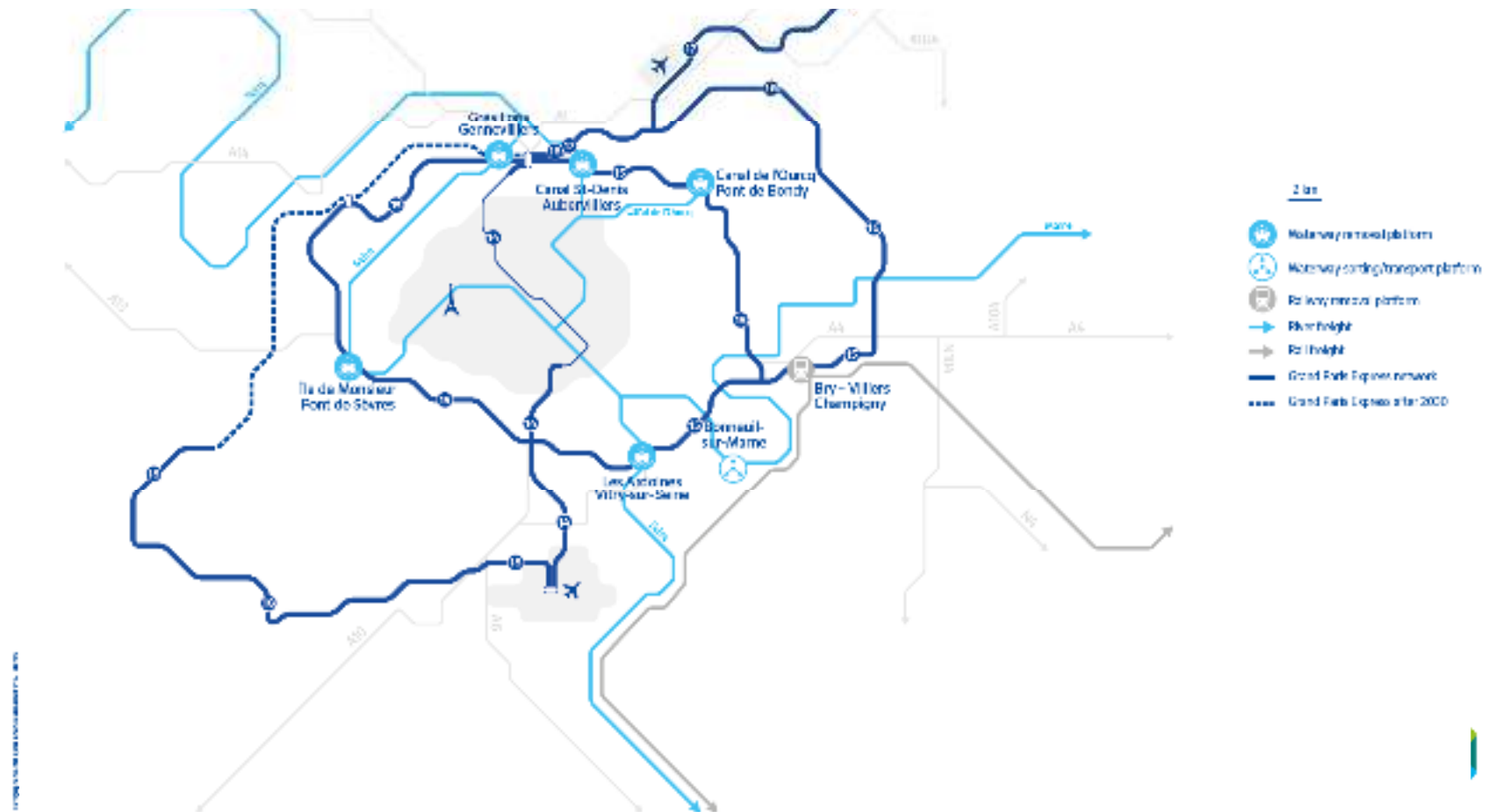
Management of Grand Paris Express' earth materials



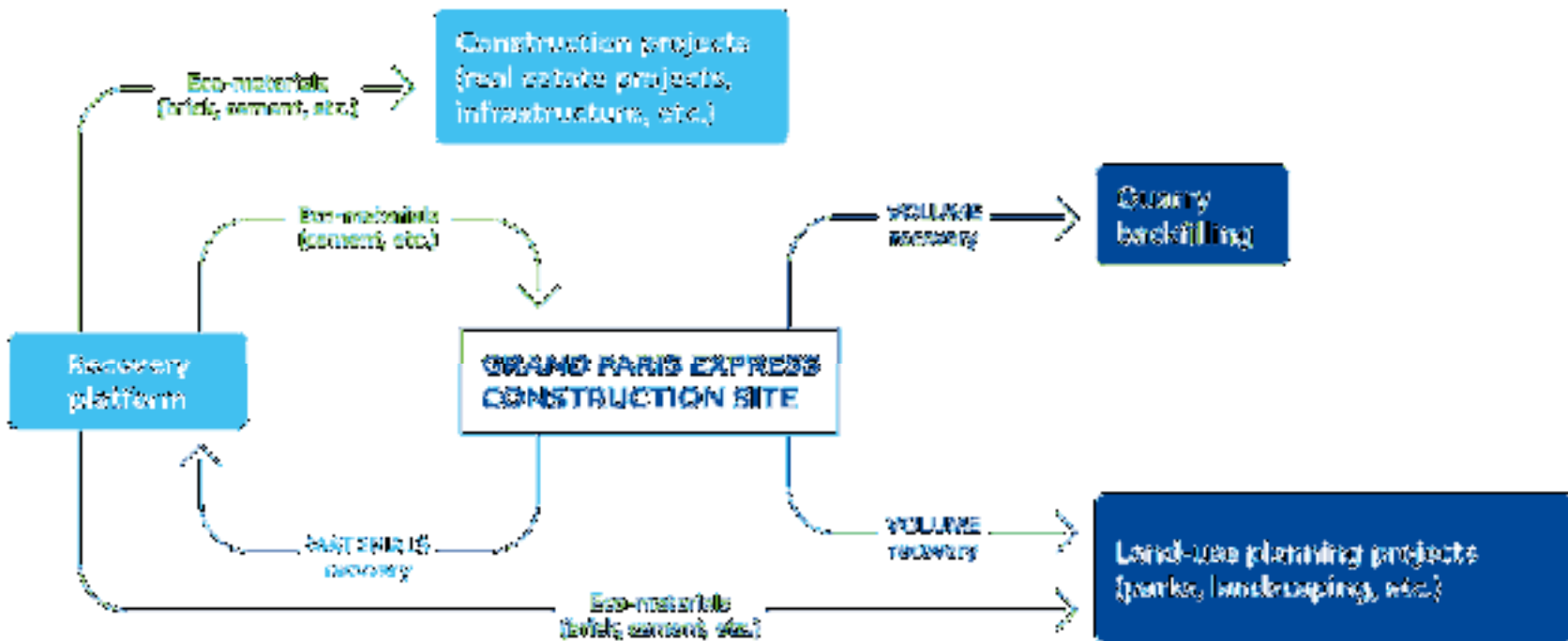
70% 
of earth materials recovered

16% 
of earth materials removed via rail or water transport

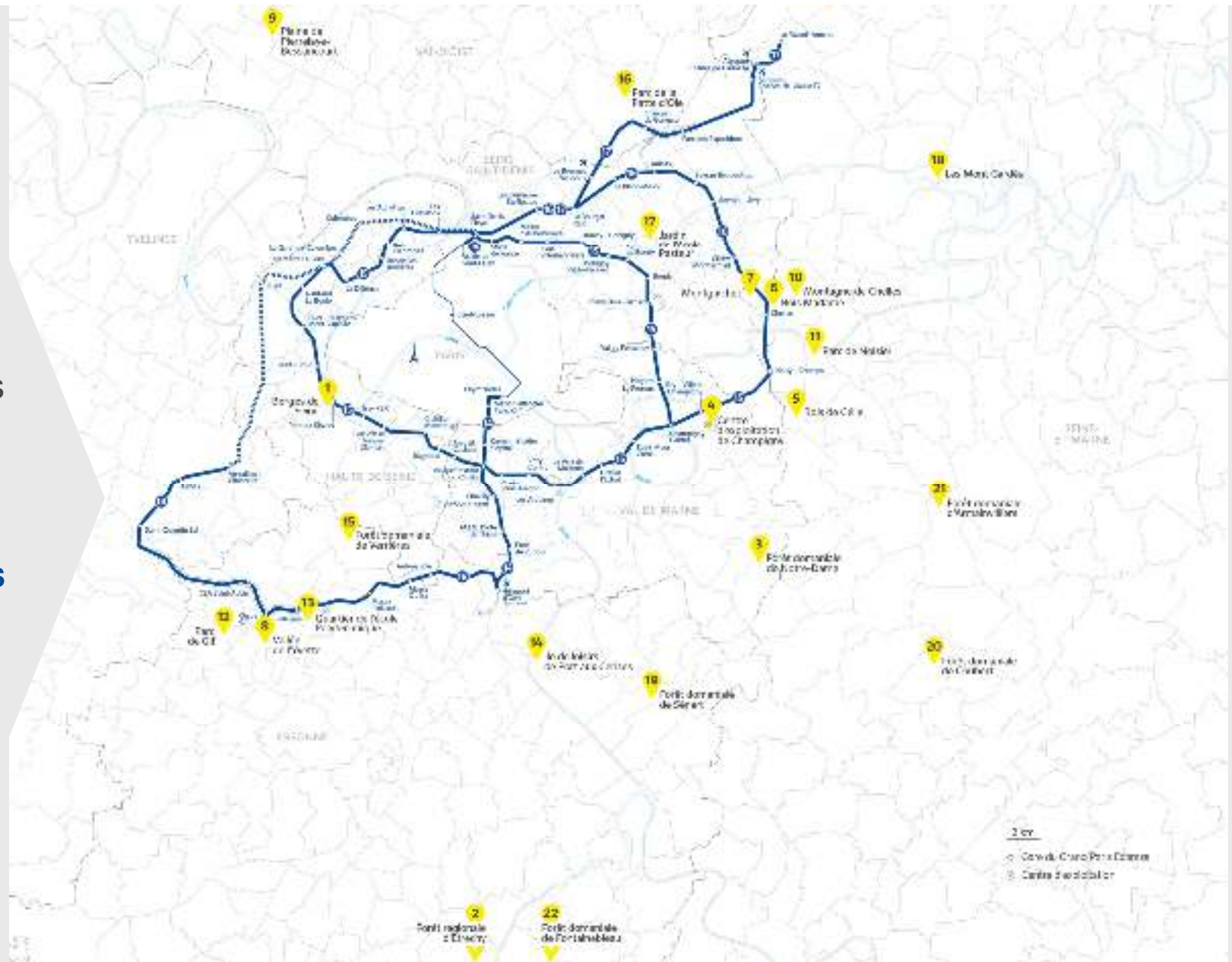
Alternatives to road transport for earth materials



Use earth materials as resources



Offset Grand Paris Express construction work by **restoring ecological habitats**



2021 indicators

Grand
Paris
express

In figures

23 million

tonnes of waste
materials excavated

49%

of earth materials recovered

39 hectares

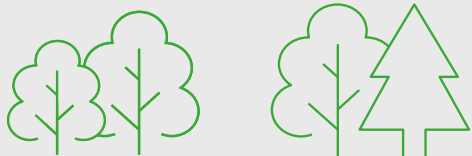
restored (environmental mitigation)

63 environmental

audits

40 hectares

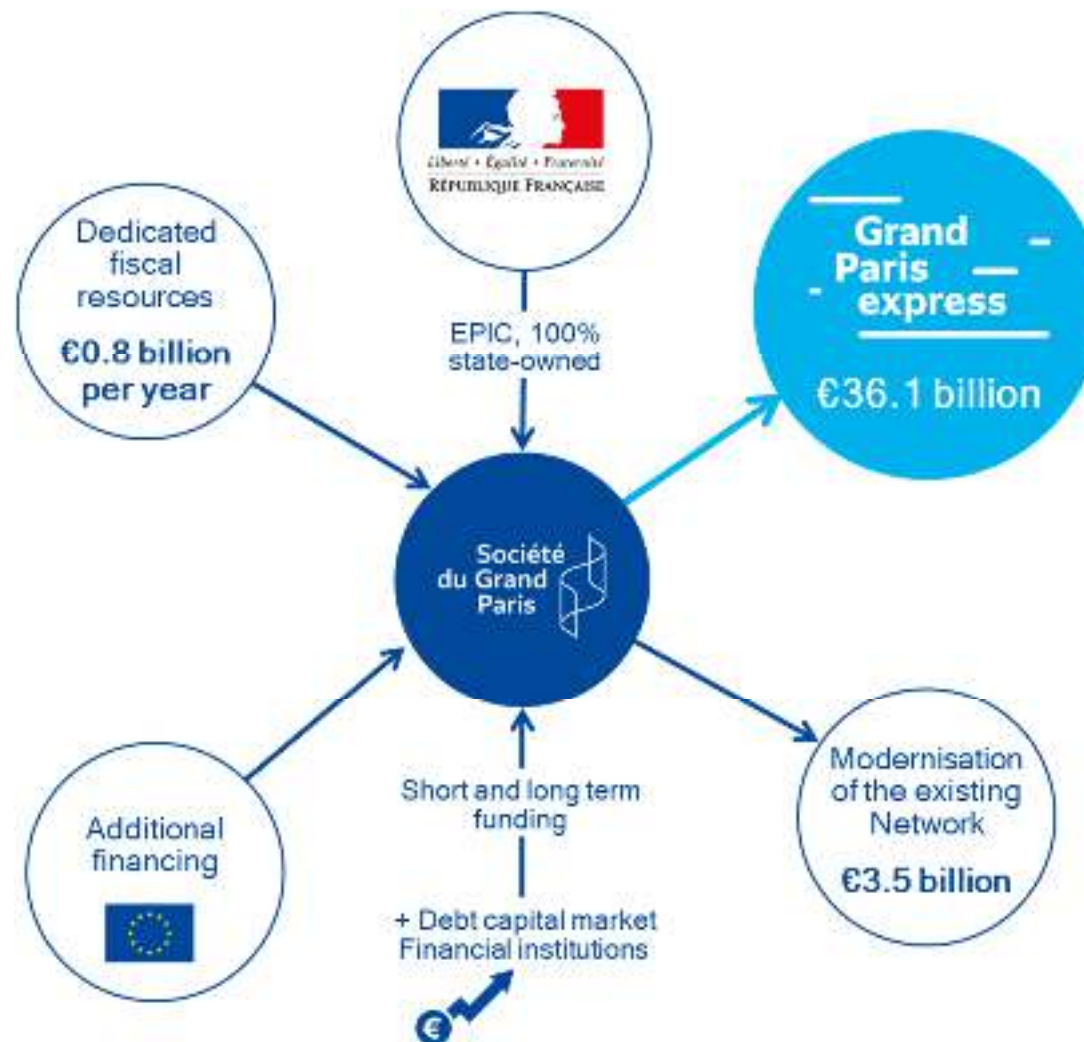
restored (forest offsets)



The Société du Grand Paris

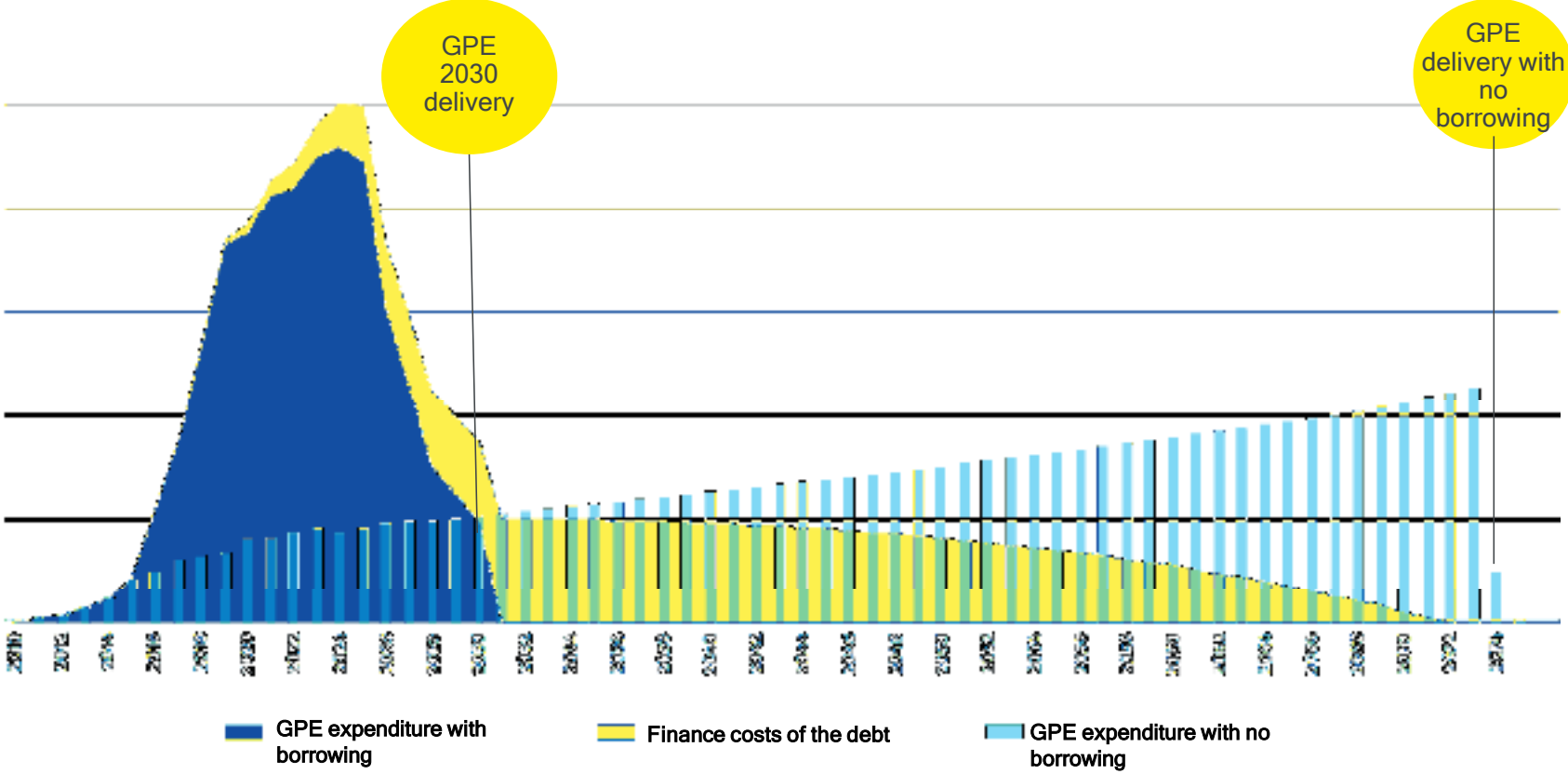


Sustainable financing



Borrowing at the heart of the SGP funding mechanism

With the same tax revenue, borrowing makes it possible to deliver the Grand Paris Express in 2030 rather than 2075



At the core of the implementation process: Société du Grand Paris

Société du Grand Paris is the government-created public company tasked with **managing the rollout and financing of the Grand Paris Express**.

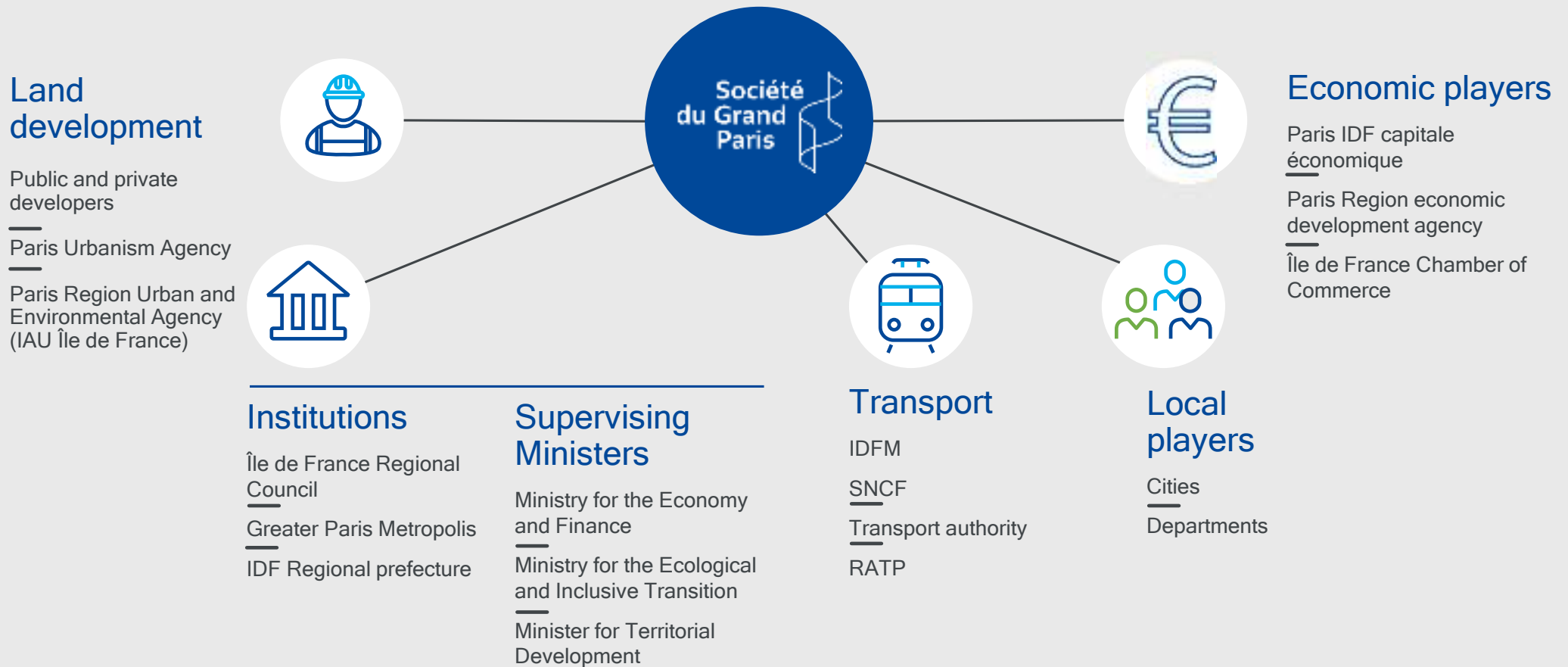
It is responsible for **constructing the infrastructures** required for the new metro system and purchasing the required rolling stock.



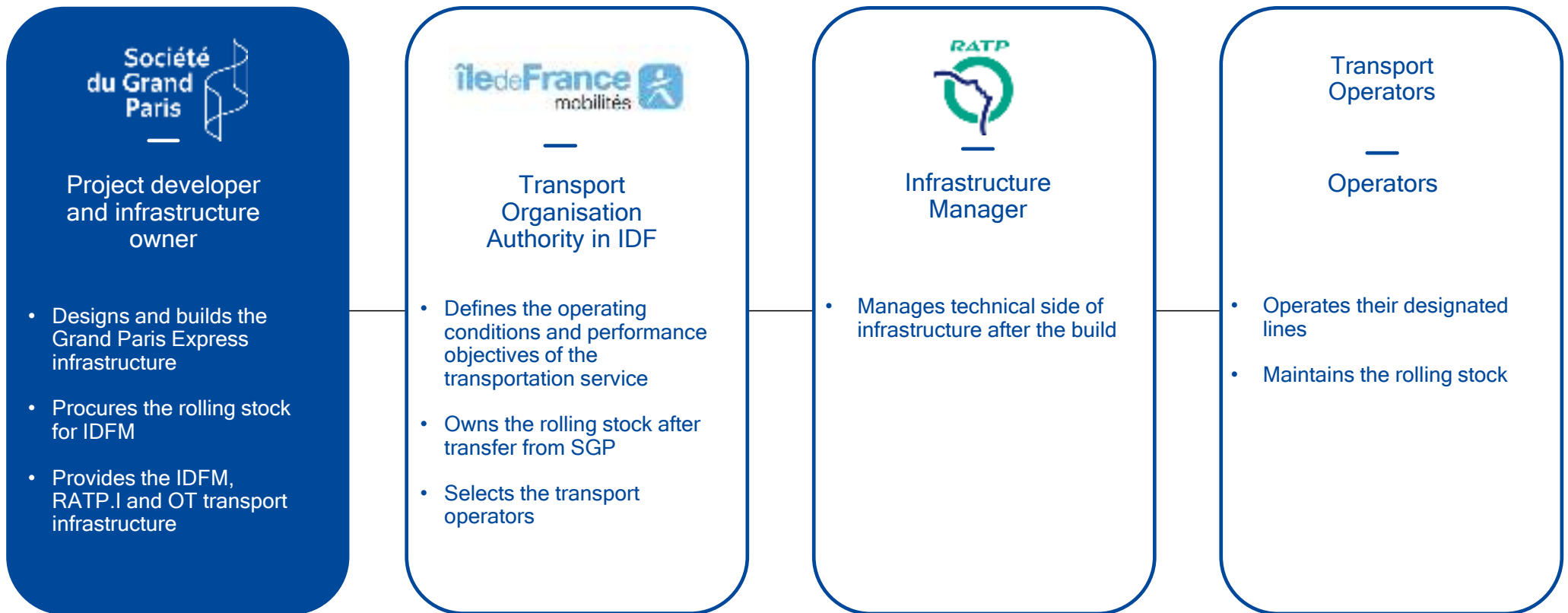
It also carries out **development operations** in areas impacted by the Grand Paris Express.

Since it was created in 2010, the company has been supported by a **team of specialists** in engineering and transport and development project management to build this extensive strategic network.

An open and human working approach that is based on partnerships and trust



Roles and responsibilities of public transport stakeholders



A project based on continuous dialogue



Public debate on the
global project.

September 2010 > January 2011

Increased
consultations and
public enquiries for
each line

Since July 2012

Continued
communication
during the
construction phase

Since July 2015

Continuous consultation with local authorities, partners and the general public

Key milestones

17 September 2007

President Sarkozy's inaugural speech on Grand Paris



12 June 2015

President Hollande opens the "Les Passagers du Grand Paris Express" exhibition



13 November 2017

President Macron visits Clichy-sous-Bois



22 February 2018

Decision-making and government support for the project



2010

Société du Grand Paris founded



2015

Works launched



2017

Declaration of Public Utility covering the entire project



2018

The French government reaffirms its support for the project



2024 >
2030

Gradual commissioning

The Grand Paris Express is hailed by the Harvard School of Design

The Veronica Rudge Green recognized every aspect of the Grand Paris Express, including its efforts to advance sustainable development, and the Société du Grand Paris model

- A solution to the challenges of **environmental transition**
- The **metro area's transformation**
- A **Better access** to housing, jobs, schools, healthcare services and entertainment
- An **ongoing dialogue** between experts, architects, engineers, public policy makers, and residents of Ile-de-France

THE VERONICA
RUDGE GREEN PRIZE IN
URBAN DESIGN

One of the world's
top
130 urban design
projects



FOLLOW THE LATEST FROM THE GRAND PARIS EXPRESS

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