

Between urban sprawl and community rebalance – Public transport at the heart of decarbonisation

How can multimodal public transport drive a new dynamic in regions?

Authors: **Frédéric BIRER** and **Benoît GUILLOT**

Foreword

In view of the climate emergency and the necessity of rethinking our mobility, Regional Metropolitan Express Services (SERMs) in France are a key example of a multimodal public transportation solution to decarbonize transport and restore balance to communities. This paper, written by Frédéric Birer and Benoît Guillot, explores the environmental and local issues surrounding urban sprawl and the excessive use of the personal car.

Egis, a key player in this discipline, provides valuable expertise by offering multimodal solutions tailored to large metropolitan areas. We stand out through our ability to provide a comprehensive array of services ranging from preliminary studies to project implementation by mobilising local forces and adopting a global and sustainable vision of mobility.



Frédéric BIRER
Rail operation expert
& service designer



Benoît GUILLOT
Transport economist



The challenges of developing and managing metropolitan communities

The environmental emergency —

In view of the climate emergency, it has become imperative to rethink our mobility. The French government, in partnership with local authorities, is committed to providing a sustainable and accessible transport system aiming to reduce personal car use in communities. Indeed, these account for half of the greenhouse gas emissions attributable to transport, which itself is the leading GHG emitter in France.

This is particularly the case in large urban areas, where the appeal of big cities, combined with suburbanisation, is amplifying:

- The **use of land** and “land take” in suburban communities;
- The **territorial divide** between city centres and suburbs, and the distances travelled on a daily basis;
- **Dependence on cars** and their ensuing emissions.

High pollution from transport, high pressure from cars

In 2022, inland passenger transport in France amounted to almost 1,000 billion passenger kilometres, 82% of which were covered by private cars. Ground public transport accounted for just 17% (in the French regions, excluding Ile-de-France).

Personal cars were responsible for 52% of greenhouse gas (GHG) emissions in France

DID YOU KNOW?

Every year, 67,000 hectares of land are artificially developed (a process known as “land take”): equating to 180 hectares per day, a surface area equivalent to:

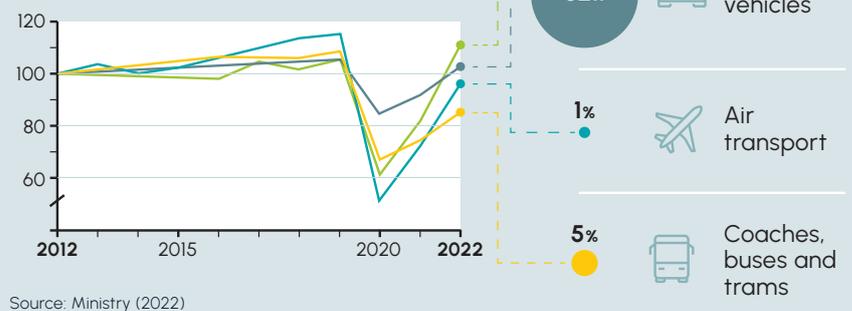
- 218 football pitches
- 20% of the Bois de Vincennes
- nearly twice the area of the Parc de la Tête d'or in Lyon
- 180 times the size of the Place du Capitole in Toulouse
- 5 times the size of the Vieux-Port in Marseille
- Twice the size of the Parc de la Citadelle Vauban in Lille.

Source: Ministries, France

Inland passenger transport

999.7 billion passenger kilometres
(corresponding to one passenger travelling 1 km)

Base 100 in 2012



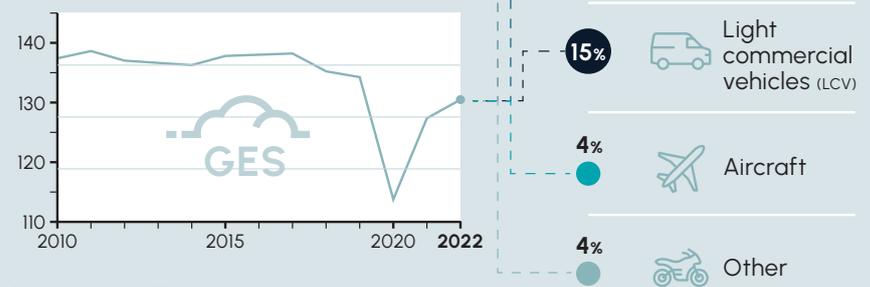
Source: Ministry (2022)

Figure 1: Modal breakdown, France, all modes

Greenhouse gas emissions of inland transport

130.5 million tonnes of CO₂ equivalent

In Mt CO₂ e



Source: Ministry (2022)

Figure 2: Net greenhouse gas (GHG) emissions of domestic transport (Ministry, data for France)

in 2022, while ground public transport only accounted for a minor fraction (less than 4%).

An explosion in distances travelled every day, and increasing land take, due in particular to suburbanisation and excessive car use

The fight against climate change and the goal of No Net Land Take (NNLT) make it essential to better link up all the communities

within mobility basins and offer their inhabitants high-performance, low-carbon mobility solutions, particularly at a time of rising demand for mobility.

Ambitious decarbonisation targets in France, a challenge for mobility.

France is committed to decarbonising its transport sector, with the aim of achieving net zero by 2050. Steadily declining quotas have been set to keep the country on course over the next 25 years.

This means that every five years, the effort made in the previous period will have to be supplemented by an additional ‘Covid effect’ to meet the decarbonisation target.

To achieve this, cars must be used less, and a massive effort must be made on low-emission modes of transport: rail and public road transport combined.

The public transport component and the promises of SERMs

What are we referring to?

SERM, a new feature in the landscape...

Since the government’s announcements at the end of 2022, and the bill that came into law at the end of 2023, Regional Metropolitan Express Services (SERMs) have become an integral part of the public debate. Public transport authorities (PTAs) and local authorities have since embraced the issue and submitted their proposals, with 24 projects so far awarded a label by the Ministry of Transport. As such, SNCF Réseau and the Société des Grands Projets (SGP) are major players in drawing up these plans, alongside local community stakeholders.

The next stage for project sponsors will be to compile executive summary applications with a view to obtaining SERM status (late 2024/early 2025).

... but timeworn initiatives

Particular attention needs to be paid here to semantics. The PTAs in France’s regions and metropolitan areas have not waited for the recent concept of the SERM to vigorously take up the subject of long-distance transport within their scope of responsibility.

This is happening amidst a strict separation of modal accountabilities (the LOTI Act of 1982), resulting in a division of responsibilities between urban and interurban transport: rail transport falls under the responsibility of the regional authorities, urban transport under that of metropolitan councils.

Kilometres travelled per day

52 km per day

Measurement of kilometres travelled per day per mode between 1800 and 2020

In France, from 4 to 50 km per day

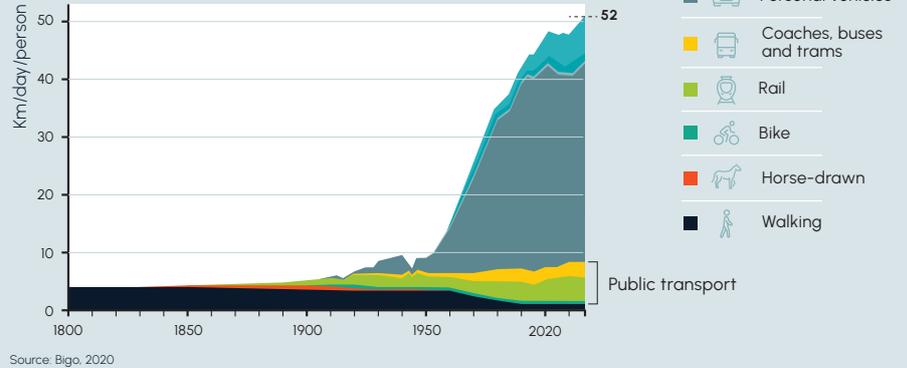
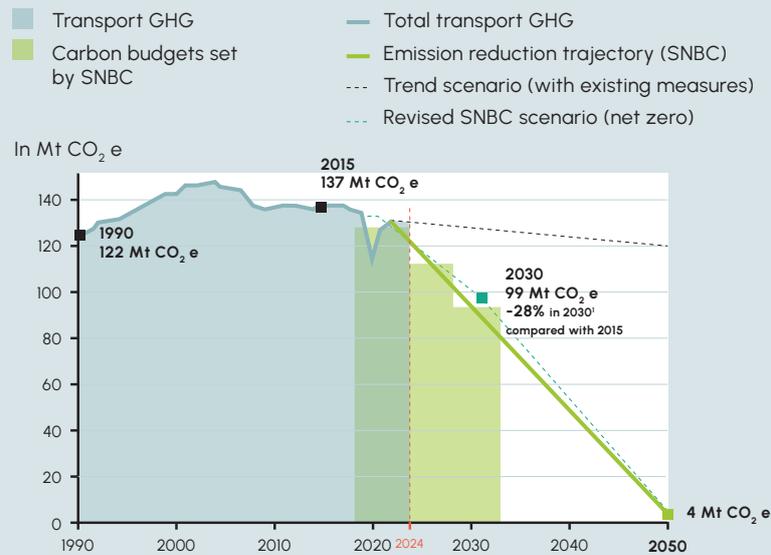


Figure 3: Measurement of kilometres travelled per day per mode between 1800 and 2020

Promise of the SERM and the public transport component

2050 Net zero
(excluding air travel)



¹ The baseline figures for 2015 were sourced from the CITEPA SECTEN 2018 inventory

Figure 4: French national net zero trajectory

Thus, initiatives have been taken in the past to improve the quality of transport connections between urban hubs around the country.

- In passenger rail, there have been initiatives to improve the TER (regional rail) service offer: daily frequency, rolling stock used, etc. Various projects and studies have been carried out on rail hubs and interchanges since 2011.

The first service agreements between local authorities and SNCF appeared in the 1960s/70s: ‘Réseau Express Districale et Départementale’ (REDD) for the Nantes metro (late 1960s/early 1970s); ‘MÉTROLOR’ in Lorraine, ‘METRAZUR’ on the French Riviera, ‘STELYRAIL’ between Saint-Etienne and Lyon, etc. (1970s). Later on came the LAZER programme in Grenoble

and its surrounding area (1989) then the Rhône department's Plan Rail (1993).

- In the regions outside Paris, these initiatives resulted in the acquisition, via the operator SNCF, of more modern rolling stock, especially suited to suburban journeys, and breaking away from old-fashioned cars: stainless steel hauled trains..



Figure 5: Z2 EMU (electric multiple unit)

More recently, there has been a trial of the Réseau Express de l'Agglomération Lyonnaise (REAL) between Lyon and St-Etienne (2005-2012), ostensibly designed as part of the Multitud' initiative.



Since then, there have been few major projects, with the exception of the SDA and SDM (PTA Mobility) studies, in parallel with the railway 'star' studies (promoted by SNCF Réseau) - 2010-2018.

- In road transport, we can also mention the 'express coach' initiatives, clearly identified as 'trunk lines'. They potentially benefit from specific arrangements: reserved lanes on motorways (VRTC) and in the city, protected stopping points, passenger information, priority at junctions, etc. Some city councils have even labelled these services as 'metropolitan'.

One such example is the 'Express Voiron-Crolles' line, inaugurated in 2002, also known for a time as the 'RER Routier'. It runs between these towns and Grenoble city centre using the motorway. Since 2018, in the Aix-Marseille metropolitan area, a double-decker coach line called Car+, running on motorways (including 6 km on dedicated lanes), has run between Marseille St-Charles and Aix-en-Provence stations in a journey time of 20 minutes, which is quicker than by train.

Initiatives do exist, but they are scattered, which can lead to competition rather than complementarity between modes. The SERM is the first fully integrated approach...

Elsewhere in Europe, a well-mastered approach.

The SERMs embody the ambitions of coordinating public transport provision. It is interesting to note that the ordered design approach has been adopted for decades elsewhere in Europe.

Germany and Switzerland, for example, are true figureheads with their integrated fare structures.



Figure 6: Map of Verkehrs und Tarifverbund / tariff union in Germany, (2024 – <https://deutschlandtarifverbund.de/>)

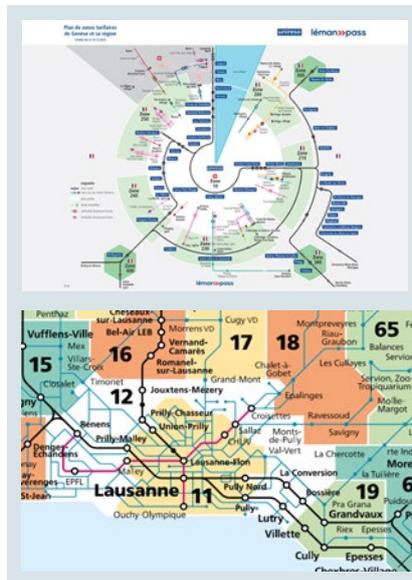


Figure 7: Concentric (Unireso-Geneva) and cell-based fare zoning (Mobilis-Lausanne) (source 2024, <https://www.tpg.ch/fr/tarifs-titres-de-transport> and https://www.t-l.ch/abos_et_billets/systeme-tarifaire-mobilis/)

... and forerunners of the SERM approach.

Two cities, Bordeaux and Strasbourg, took the plunge first (in 2017), capitalising on favourable circumstances.

- Bordeaux: an opportunity arose with relatively lower demand than elsewhere; low density in the south-west and few, if any, major hubs (over 50,000

inhabitants) nearby;

- Strasbourg: the conurbation benefited from the joint and effective collaboration between the city and regional authorities - already standard practice in Alsace, as evidenced by the successful tram-train and tram-TER intermodal projects. The SERM required minimal investment, owing to rail hubs with spare capacity and services that were already good.



Figure 8: Main orientations of the two premier SERMs in France: Bordeaux and Strasbourg (2024 – Networks)

Different names for the same concept.

Furthermore, SERM initiatives in their current form, despite referring to ultimately the same outcome, may bear different names in the four corners of France: RER-Métropolitain (RER-M), Réseau Express Métropolitain (REM), Service Express Métropolitain (SEM), Services Express Régionaux Métropolitains (SERM), etc.

Each time, the aim is the same: a framework of railway lines or express coach services dedicated to the metropolitan area, distinct from the traditional TER trains or the departmental or regional coaches, which tend to cover the regional network. The aim is to meet the travel needs arising from the appeal of major metropolitan areas, by providing a basic framework of high-performance public transport for the inhabitants of urban and suburban areas.

How does it work?

SERMs (Regional Metropolitan Express Services) refer to a multimodal transport service offer designed to meet the mobility needs of communities. They constitute a strategic response in providing alternatives to fossil-fuelled mobility. This concept goes far beyond a simple RER, as it is not limited to rail transport alone.

SERMs consist of developing multimodal transport services within major metropolitan areas, drawing heavily on rail, with a view to providing a comprehensive service offer.

In practice, this means that users can enjoy access to an efficient public transport network for all their daily journeys, at any time of the day. They can use several reliable and regular transport solutions, such as trains, express coaches, trams or underground trains, express bicycle networks or carpooling; all using a single ticket or a single application. The transition from one mode of transport to another happens at a multimodal interchange hub, providing access to all the services needed to facilitate the modal switch: parking, easy access for cyclists and pedestrians, and real-time passenger information systems.

SERMs are a powerful lever through which to address mobility needs, as cities continue to sprawl over ever increasing areas. They are also a tool with which to plan and manage the development of communities and regions.

SERMs place users at the centre of their logic, offering a global vision of the region and of mobility. By encouraging a shift towards more sustainable modes of transport, SERMs contribute to decarbonising travel and improving access to outlying areas.

Coordinating a necessary transport chain

Articulated strata of networks and lines.

For SERMs to deliver on their promises, the public transport chain must be clear, transparent and easy to understand. This is why Egis proposes an analysis in three distinct layers, with mobility and mode solutions tailored to the scale of the community, the intensity and multiplicity of mobility, and the architecture of the networks that exist:

- Metropolitan area: on the scale of the mobility basin, connect the major hubs in the mobility basin, i.e. provide convenient frequencies and timetables

SERM, integrated intermodality

Integration of different intermodal solutions within SERMs



Figure 9: Main components of SERMs (2024 – Egis)

Characteristics of the SERM

SERM characteristics in terms of the ambition and performance of the service on offer

A service guaranteed all day (also Saturday and Sunday) with regular timetables

An extensive timetable amplitude to adapt to all reasons for travel

Frequent stops in densely populated zones. To be squared with the need to not lengthen journey times for suburban areas and beyond

Increased frequencies at peak time (at least 1/2 hour in peak and 1/4 hour when needs so require for RER-M)

Attractive service frequency at off-peak to avoid service gaps (1 train per hour or half-hour)

Rolling stock: high capacity, high performance, suited to high passenger boarding/alighting, carbon-free energy

A SERM component included in the overall urban/metropolitan transport service offer

Consistent services (frequency, timetable)

Mobility as a Service (MaaS) – Fare integration, multi-modal information, etc.

Key factor of inter-modality in multimodal interchange hubs

Source: Egis, 2024

Figure 10: Characteristics of the SERM

SERM levels

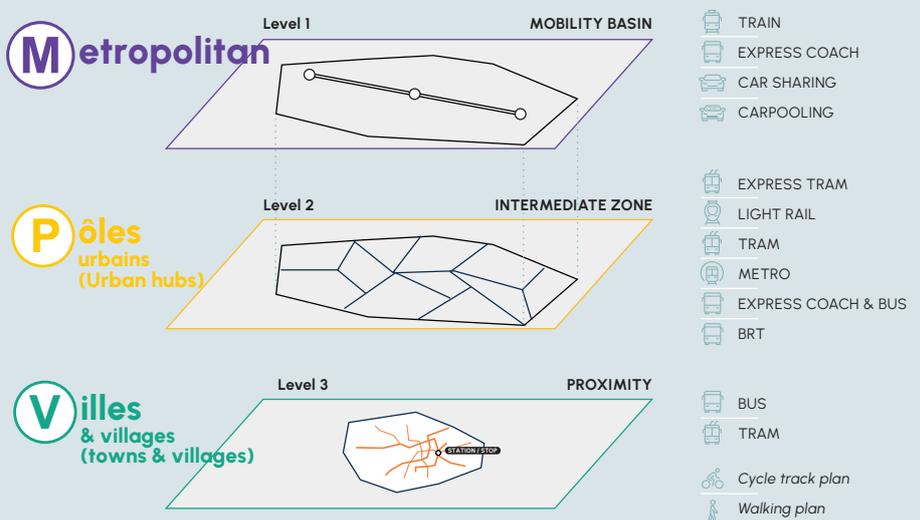


Figure 11: SERM, granularity of modes by community strata (2024 – Egis)

throughout the day, and even at weekends;

- Urban hubs: on the scale of macro-zones in the catchment area, offer trunk lines that interface well with the backbone lines, on the scale of multimodal interchange hubs (PEMs), to ensure that transport services are well spread;
- Towns and villages: as close as possible to inhabitants, jobs and activities, continuing the dissemination and performance of public transport and carbon-free mobility, over the first and last miles.

In this way, low-carbon public transport mobility is seen as a chain of interdependent services. The strength of the chain therefore depends on the strength of the weakest link.

High capacity and efficient modes

SERM, in principle a rail-based framework.

The SERM relies first and foremost on rail transport, whose services must become reliable and frequent. This implies that the network is correctly sized, and in this case immediately available, to enable the new metropolitan services to be introduced in the short term. Satisfactory line performance in terms of continuity and journey times is therefore crucial to ensuring a consistently efficient service.

This also implies that the railway lines, where the land is locked down, coincide exactly

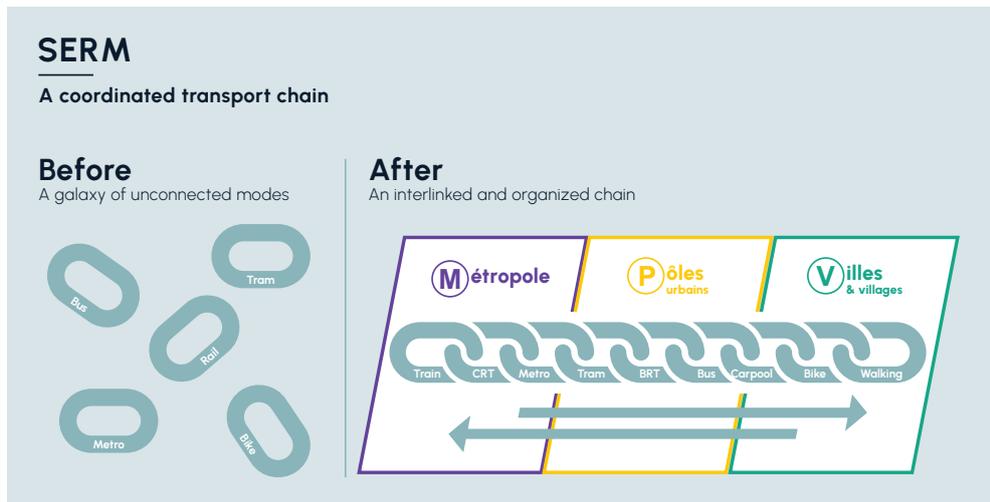


Figure 12: SERM, a coordinated transport chain (2024 - Egis)

with today's mobility corridors, and those of the next fifty years at least. These two conditions are sometimes met, but they may not apply to every region.

In such a case, Egis' engineering expertise is capable of accurately forecasting mobility and estimating the technical feasibility of creating new rail corridors or increasing the capacity of existing ones, as well as assessing the cost of the work involved.

But time is short, and transport has ambitious goals to meet in terms of decarbonisation. Local politicians are under pressure from both national policymakers and local residents to find solutions quickly. They must act now!

Too few lines for much too much demand.

The rail network caters to a large number of different types of traffic, with objectives that are sometimes simultaneous and cannot be satisfied at peak times: more freight services to take trucks off the roads, more TGV and Intercités services to compete with air travel, more TER and SERM services to attract older people and convert existing car users to public transport.

These difficulties have been predicted for a long time. In addition to technical needs, capacity requirements appear to be hard to overcome in the short and medium term (Lyon, Lille, Marseille, Toulouse,

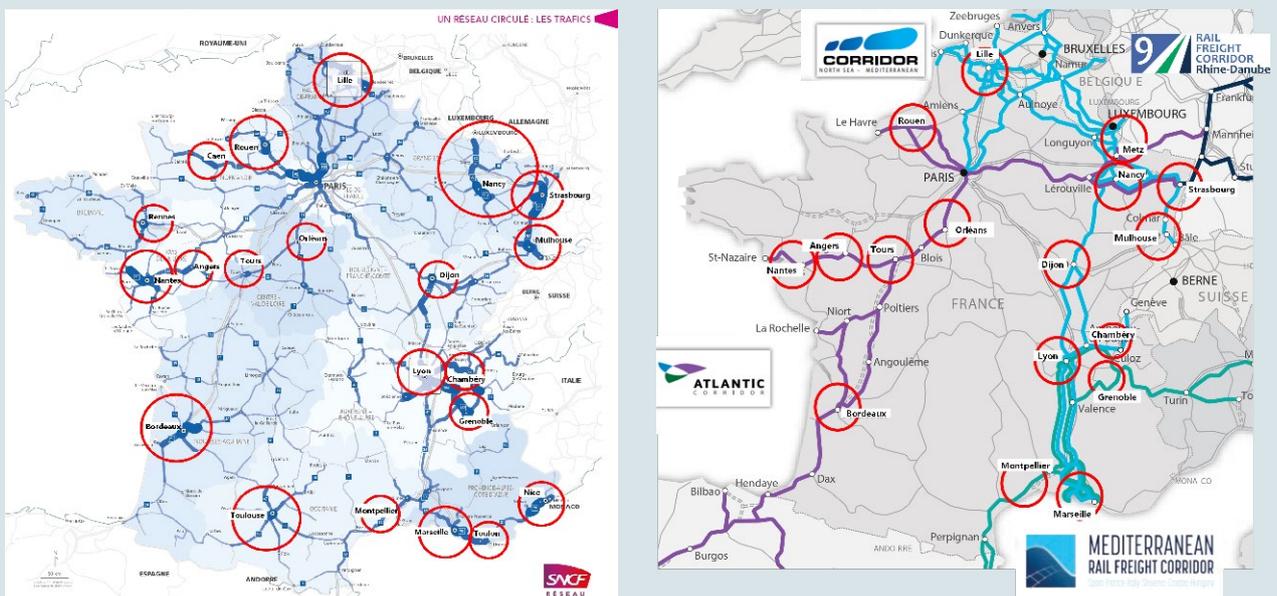


Figure 13: Passenger and freight traffic hotspots around railway 'stars' (2024 - SNCF Réseau)

Grenoble, etc.). In addition, the ‘technical walls’ that arise due to the need for new infrastructure, sometimes announced twenty or thirty years ago, such as the Lyon Conurbation Rail Bypass (CFAL), new infrastructure in Hauts-de-France (tunnel under Lille), or the tunnel crossing under Marseille, complicate the technical and financial feasibility of the metropolitan rail service.

Essential additions through other modes

Today’s rail network runs the risk of not being able to cope with the excessive demands made on it, particularly since another current challenge is to reinforce the robustness of lines that may have been



undermined by decades of underinvestment in the conventional network.

Figure 14: Rail service delays map (2019, ARAFER)

Creating new lines or improving the performance of existing corridors needs to be planned well in advance and requires massive financial resources. At this point, the answer cannot be rail alone, because time is running out.

This is why the SERM is also, above all, a gradual, common-sense response for the ‘backbone’ stratum: road lines in the majority of cases for immediate efficiency, to allow time to consider an appropriate rail response, gradually augmented over the years, in step with the financial capacities

of the partners and their action priorities.

Essential success factors..

The success of SERMs depends first and foremost on mobilising the strengths of the communities and aligning them around common interests and goals. Egis strives to bring all the players together to ensure that the new transport architecture is completely successful. This will involve:

1. helping to create a **single transport mobility brand**, with clear network granularity and the corresponding technical and financial resources;
2. applying a **fare structure that is consistent** with the objectives of the community, and deploying a simple ticketing system that is fully interoperable throughout the transport chain;
3. undertaking **in-depth technical studies** to clarify and consolidate the project (multimodal studies, ridership forecasts, technical studies);
4. fully **coordinating the mobility players** in the community, according to their respective areas of responsibility: the Regional council, public transport authorities, EPCIs, infrastructure managers, urban and inter-urban operators, etc;
5. **synchronising the SERM project with the territorial consistency blueprints (SCoT)** and planning documents, defining the projects of the communities at the different scales of the mobility basin;
6. channelling all **efforts towards public transport**, with a view to sustainable and frugal mobility, with coherent actions to limit urban sprawl and single occupancy car use;

7. organising **clear and accepted governance** of mobility in the catchment area, starting with greater coordination between the EPCIs.

Egis’ added value in designing a SERM project

Drawing up SERMs requires an overall vision of the community and of travel so as to define multimodal mobility solutions and the sweeping measures that need to be taken in terms of transport services and infrastructure.

Egis’ added value lies in our ability to provide a complete range of services, from consultancy to project definition, from upstream studies for project prefiguration and mobility plans to deployment and implementation assignments.

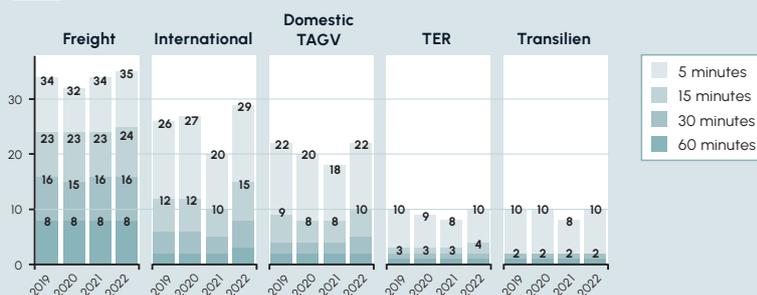
Our approach is geared towards the needs of future users: what are their expectations? What is missing today in order to better interconnect the community, in addition to what already exists? Are there underperforming or under-capacity transport services?

Starting with an analysis of what already exists, we can adjust the definition of the project as necessary, by correlating these analyses with the ambitions of the community.

This work benefits from the Egis group’s wide-ranging expertise in all urban and rail transport systems, as well as in cross-cutting matters such as governance, operation and financing.

Our presence in France and its overseas territories places us at the heart of projects and in direct contact with local stakeholders.

Average rate of delays of train arrivals at terminus by activity by threshold (in %)



Source: ART according to SNCF Réseau figures

Figure 15: Average rate of delays (2023, ART report)

Focus: good governance acting as leverage

Reconsideration of logics of action

- A need to invent collaboration between the various administrative levels, the famous French 'millefeuille', but with reservations or exceptions depending on the quality of the relationship and the interplay between local players:
 - cases of city councils that do not want the regional council overseeing their local projects
 - opposition from regional councils to the weight of city councils in railways
- No specifically dedicated tools (German tariff union, specific powers for joint transport authorities, etc.);
- Slow and unequal take-up of the concept (city council / regional council):
 - Different branding and commercial identity
 - Fare integration not yet part of the culture
- Rail packages as a means of changing commuter train operations: promises but no feedback possible for the time being.

Structuring a strong partnership approach

- Closer governance between the city council, regional council and Government, with the recent support of the SGP, to structure the ambitions of SERM in terms of modes and services, with a rail strategy based on medium/long-term mobility needs:
 - Trade-offs based on transport corridors and intermodality (rail, tram or tram-train, express bus);
 - Priorities between forms of mobility, freight and passenger traffic, suburban and regional or domestic-international traffic are therefore a major issue, given the funding trade-offs involved;
 - Definition of an upstream budget framework for financing. The Société du Grand Paris, renamed the Société des Grands Projets in early 2024, will play a new support and coordination role, drawing on its experience with the Grand Paris Express metro project (and its expertise in raising project debt).
- Working closely with SNCF Réseau to ensure that the scenarios incorporate :

- The national rail network's strategic programme;
- The technical constraints of the rail network.
- The robustness of the scenarios depends on this partnership approach.
 - Quality and robustness of the scenarios
 - Quality of the short - medium - long term project trajectory.

The subject of the SERM is an eminently technical one, a dream assignment for engineers. The challenges are often complex, but are well mastered thanks to the progressive, multi-domain assessments carried out between the emergence and operational phases (project management, works, etc.).

The success of the SERM approach also depends, above all, on the determination of the partners involved in public decision-making to work together, to build shared ambitions and to accept compromises on a collegiate basis.

It will also be necessary to ensure that the system's data, assumptions, constraints, functional and performance objectives are shared and circulated effectively.

Egis' contributions to ongoing SERM projects

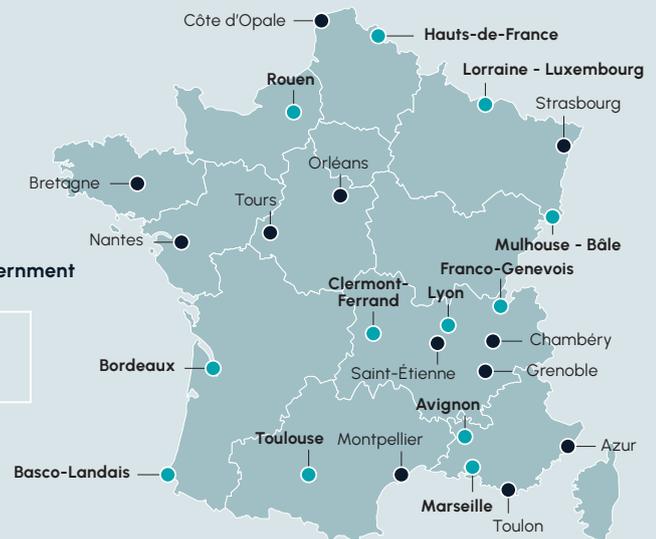
Many communities labelled

To date, 24 SERM projects have been approved by the French government. Egis has been involved in twelve of these projects at various stages. Our teams work with regional and local authorities and PTAs, as well as with, SGP and SNCF Réseau, the two primary players in SERMs, to help them make the right decisions on complex projects that involve multiple players.

Regional Metropolitan Express Services (SERMs)

24 projects labelled by the Government

- Projects to which Egis has contributed (since 2010)
- Other labelled projects



Map source: DGITM

Figure 16: Communities awarded SERM labels by the Government in 2024 (2024 - DGITM)

Egis' extensive involvement in SERM communities

1.	Rouen / Normandy	› SNCF Réseau (2024): Assistance to Client New paris-Normandy Line, interfacing with the Rouen SERM
2.	Hauts-de-France	› SNCF-Réseau (2020): Studies into advisability of deploying SERM › SNCF Réseau (since 2022): Scenario feasibility study › SGP (2024): Peer review on ridership forecasts
3.	Lorraine-Luxembourg	› SGP (2024) : Multimodal ridership forecasting
4.	Mulhouse-Bâle	› SGP (2024) : Multimodal ridership forecasting
5.	Franco-Genevois	› SNCF Réseau: Ridership studies and social/economic impact
6.	Lyon	› SNCF-Réseau (2010-2011): Advisability and feasibility studies on Lyon rail junctions
7.	Clermont-Ferrand	› SNCF-Réseau (2024): Study for a masterplan for the Clermont Ferrand railway 'star'
8.	Avignon	› Grand Avignon (2023-2024): Support in defining a SERM project in the community
9.	Marseille	› Aix Marseille Provence council (2022-2024): Railway structure blueprint
10.	Toulouse	› Occitanie regional council(2020-2021): Advisability study for development of railway 'star' › SNCF Réseau (2022-2024): Ridership studies and social and economic impact assessment of RER Métropolitain project
11	Bordeaux	› Nouvelle-Aquitaine regional council and Bordeaux Métropole (2017-2018): study on rail service needs in Greater Bordeaux region › SNCF Réseau (2022): Assistance in conducting social and economic studies for the RER Métropolitain.
12.	Basco-Landais	› Nouvelle-Aquitaine regional council and SMPBA (2021-2024) : Study on rail services in Basque and Landes region.

The Egis vision for the design of the SERM project

The community project, an initial and fundamental component

At a local level, stakeholders need to work together to define common objectives that are sustainable over time. As far as possible, transport and mobility should not be a subject of partisan opposition, but rather an area of agreement. The aim must be to stay on a steady, sustainable course over the long term. It is on this solid basis that

the central functionalities of the mobility system can be defined. Egis then helps a public transport system to emerge as the appropriate technical response to the community project.

In this regard, the will to act must be backed up with steel resolve.

Each of the PTAs and each of the communities incorporates **provisions aimed at limiting urban sprawl** into their planning documents (SRADDET, SCoT, PLU, PDU, PCAET, etc.). This implies coordinating the development of station areas and mobility services to facilitate inter-modality.

Designing the SERM requires the preparation of an overall blueprint, a true master plan, or an ordered deployment programme:

- It sets out the scope of the SERM, the service ambitions and the projects that make up the SERM service offer;
- It prepares the financing plan for the project according to a deployment schedule;
- It draws up the SERM governance plan for subsequent phases.

But the success of the SERM is also a challenge for public decision-makers: the absolute necessity to 'align the planets' of urban planning, because all the components of mobility have consequences for their neighbours.

Egis offers SERM promoters its expertise in complex project management by mobilising the partners and specialists who can help design solutions that simplify the daily journeys of local residents..



Figure 18: Alignment of transport/mobility masterplans (2024 – Egis)

The aim is to take mobility needs in the urban community as a starting point, establish shared objectives and build a transport service that can meet the challenges. The overall plan provides the ingredients for the SERM to achieve its objectives by coordinating them.

SERM starting point

A mobilised community with a mature view of its goals

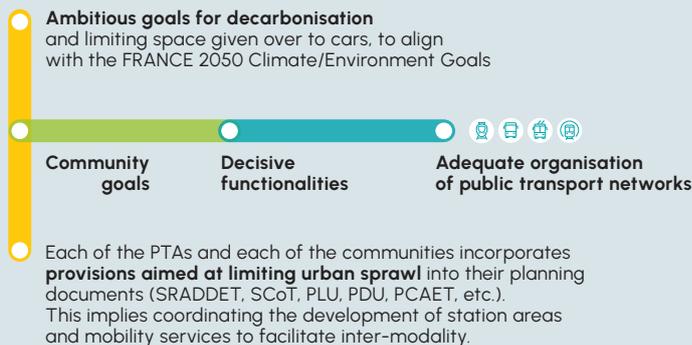


Figure 17: SERM starting point, a mobilised community with a mature view of its goals

A response to a mobility need, a goal to set

Transport engineering and public decision-making cannot afford to simply improvise infrastructure. It is complex to design and costly to build, meaning that a great deal of planning has to go into it. Similarly, project completion times are often long. It is vital to avoid making the wrong decisions. The mobility project is therefore the result of a 'tailor made' approach. For this reason, we must not think in terms of Mode or Infrastructure, but above all Service.

This requires careful thought and support, to guarantee success.

- A **detailed appraisal of the community and mobility** using a multimodal approach, which is not just rail-centric but also includes aspects relating to all modes of transport (road and urban public transport, carpooling, cycling, etc.), as well as the interchanges and connections between them;
- A **forward-looking vision** covering the community, mobility and the projects undertaken by the various partners;
- A **partnership-built definition** of objectives and guidelines;

- Develop solutions to meet needs that are **relevant to the community** and its challenges;
- Share the results and progress of the studies to promote **ownership** and **acceptability** of the projects.

In Toulouse since 2016, Egis has been coordinating multimodal studies, a partnership approach in which mobility stakeholders work together to define tomorrow's mobility solutions for the greater Toulouse area. These studies have led to the emergence of a plan for a SERM in the Toulouse area, and are continuing with various support initiatives with regard to fares, the community plan and mobility services. We are also working alongside SNCF Réseau to study the conditions for the doubling of certain sections of the Toulouse-Auch line, with a view to providing the SERM services on this segment of the line.

Multi-themed technical studies

At the study stage, Egis is capable of deploying a very wide range of expertise, enabling project owners, public transport authorities and project promoters to ensure that the money invested is fully consistent and effective, in line with their community objectives.

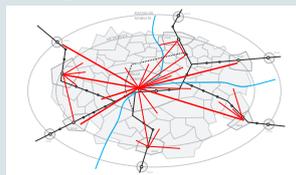
- Analysis of user-oriented **needs and objectives**: for whom? what for? to meet what needs?
- Formulation and analysis of different scenarios, with supporting **technical studies** on various topics: public transport services, rail operations, infrastructure feasibility, ridership forecasts, socioeconomics, etc;
- To provide **decision-support elements** for choosing a scenario, based on the construction of a coherent vision between mobility, transport services and the operation of rail and road transport infrastructure;
- Evaluate the **impact of the SERM in terms of costs** (for both infrastructure investment and service operation), modal shift and benefits for users and the community, enabling the objectives to be achieved.

Progressivity of analysis

1 - Gain insight

into the future demand and the goals chosen by the community, in keeping with its context and own aims

Mobility



Desired routes



2 - Design

transport services (frequencies, modes) in step with the community's expectations

Frequency of SERM trains in all stations



All SERM lines trains + express coaches



3 - Identify

the investment in the transport networks for the ordered and consistent deployment of the SERM

Rail clashes and adjustments required



Figure 19: SERM, a progressive study approach for coordinated design (2024 – Egis)

To improve access to the **Lille metropolitan** area, studies are underway into the development of new rail services, with multiple scenarios examined from the perspective of service offer, passenger numbers and technical feasibility. And today, Egis is continuing its study of the future SERM, which will include a new 35 km line, fifteen rail upgrades to the existing network and a new underground station in Lille. The latter poses a number of technical challenges that Egis is addressing with all its experts..

Define a shared overall vision and the route for its deployment

- Set out the target vision for SERM's service offer and its deployment schedule over time. The aim is to provide a long-term vision, as well as the steps needed to achieve it, as part of a multimodal roadmap;
- A technical and functional analysis of the projects, as well as a strategic and political analysis, to ensure the most effective deployment while taking into account the applicable regulatory procedures;
- Helps to scrutinise the issues of governance, the financing plan and the sharing of responsibilities between project owners, and to prepare for implementation;
- It also helps to prepare stakeholders to take ownership of the project: acceptability/consultation.

Multi-technical scenario analysis. coherent implementation phasing

1 - Establishment of scenarios

Timetable alternatives
Infrastructure alternatives
Scenario selection then co-construction
Selection of stabilised scenario(s)

2 - Development of selected scenario

OPEX operation
Ridership
Social/economic impact
Carbon/Environmental impact
CAPEX Technical

3 - Investment phasing

Definition of programs
Timeline
Investments costs

Figure 20: Multi-technical scenario analysis, coherent implementation phasing (2024 – Egis)

Egis carried out the original studies on the **Bordeaux RER** project for the Nouvelle Aquitaine Region and Bordeaux Métropole. These studies validated the project's roadmap, which is now being implemented step by step, in particular with the first through line (without a terminus in Bordeaux city centre), running between Libourne and Arcachon.

In conclusion

We believe that SERMs constitute an ambitious and necessary response to the challenges of mobility and decarbonisation of transport in France. Here, Egis' expertise is essential to ensure the success of these projects, thanks to an integrated approach and an ability to coordinate the various regional stakeholders.

The expected benefits of SERMs include a significant reduction in greenhouse gas

emissions, better integration of suburban communities and improved quality of life for local residents. However, questions remain, particularly concerning the ability to finance and deploy this infrastructure rapidly, and the management of conflicts over the use of the rail network.

Ultimately, the success of SERMs will depend on rigorous planning, massive investment and clear governance, so as to effectively meet the travel needs of local residents and significantly contribute to reducing greenhouse gas emissions.

In addition, this whole approach is user-oriented, and takes account of ever-tightening public finances, in order to support project sponsors in their choices and priority setting.

References

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Glossary

ART	<i>Autorité de Régulation des Transports / Transport Regulation Authority</i>
BRT	Bus Rapid Transit
CAPEX	Capex method
CFAL	<i>Contournement Ferroviaire de l'Agglomération Lyonnaise / Greater Lyon rail bypass</i>
DGITM	<i>Direction Générale des Infrastructures, des Transports et des Mobilités / Directorate General for Infrastructure, Transport and Mobility</i>
EPCI	<i>Etablissement Public de Coopération Intercommunale / Public Inter-Municipal cooperation Establishment</i>
NNLT	No Net Land Take
PCAET	Plan Climat-Air-Energie Territorial
PDU	<i>Plan de Déplacement Urbain</i>
PLU	<i>Plan Local d'Urbanisme / (urban) land use masterplan</i>
PTA	Public transport authority
REAL	<i>Réseau Express de l'Agglomération Lyonnaise / Greater Lyon Express Network</i>
RER	<i>Réseau Express Régional / Regional Express Network</i>
SCOT	<i>Schéma de Cohérence Territoriale / Territorial Consistency Blueprint</i>
SDA	<i>Schéma Directeur d'Aménagement / Development Masterplan</i>
SDM	<i>Schéma Directeur de Mobilité / Mobility Masterplan</i>
SERM	<i>Service Express Régional Métropolitain / Regional Metropolitan Express Services</i>
SGP	<i>Société des Grands Projets / Major Project Corporation</i>
SNBC	<i>Stratégie Nationale Bas Carbone / National net zero strategy</i>
SRADET	<i>Schéma Régional d'Aménagement, de Développement Durable et d'Égalité des Territoires</i>

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Authors: **Frédéric Birer and Benoît Guillot**

Contributors: **Cloé Chevron - Julien Borne - Guillaume de Tilière - Baptiste Minni**