

OPINION ON THE REVISION OF THE TEN-T GUIDELINES

STRENGTHENING URBAN NODES AND INNOVATION TO ENHANCE THE CAPACITY, SUSTAINABILITY, AND COMPETITIVENESS OF THE EUROPEAN TRANSPORT SYSTEM

Established in 2001, ERRIN promotes the regional and local dimension in European research and innovation policies and programmes. The network counts around 120 members who primarily collaborate through our thirteen Working Groups covering both thematic areas and overarching policy issues. ERRIN supports project development and knowledge exchange between members to enhance regional and local research and innovation capacities and to foster sustainable and inclusive growth in all regions.

This opinion was prepared by a drafting group consisting of the leaders of our Transport working group as well as members of the wider working group. Input was collected from the Transport working group.

As a network of regional and local authorities dealing on a daily basis with urban mobility and innovative transport solutions, ERRIN welcomes the revision of the TEN-T guidelines launched by the European Commission in April 2019. Since its entry into force, the original Regulation (No 1315/2013) has revolutionised European transport policy by creating the concept of urban nodes, which did not exist before.

Over the years, the TEN-T regulation has been instrumental in transforming the existing patchwork of EU transport modes into a more integrated network encompassing all Member States, regions, and cities. The current guidelines recognise and formalise the role of urban nodes in these transport networks as important hubs that facilitate the flow of people and goods. This opinion focuses solely on urban nodes, research, and innovation aspects of the TEN-T guidelines.

As the number of journeys has increased – in Europe and elsewhere – transport has become a major contributor to climate change. Unless action is taken, transport risks becoming an even larger source of GHG emissions, jeopardising the EU’s ability to meet its overall emission reduction goals and the objectives set out in the Green Deal. Transport in urban nodes constitutes a large part of this (80%, Eurostat) and as such a renewed TEN-T policy is crucial to achieve the EU’s climate goals.

Economic growth needs to be decoupled from rising emission levels. The EU Industrial Strategy intends to transform the industry to become greener, more circular, and more digital to support our SMEs to keep Europe sustainable and competitive. The resulting job creation must also be taken into account as a factor increasing the pressure on the transportation system in urban nodes.

In the same vein, the first lessons learned from the COVID pandemic by the national and regional authorities will also include the relocation of key industrial production to the EU. A greater pursuit of onshoring critical supply chains in Europe has the potential to increase transport pressure in urban areas. This is because it will lead to more goods and people movement, especially in urban nodes, to support those supply chains within the EU’s borders. Similarly, we need a transport system that is prepared for future force majeure and develop a new vision of the European transport system that goes beyond article 5 of the current regulation. Hence, ensuring resilient and sustainable transport in urban nodes is essential and must be prepared for as soon as possible.

ERRIN values the main objective of TEN-T to create European added value by creating cohesion (between long distance traffic and local and regional traffic), by adding efficiency (through connections of nodes and stimulation of new innovative technologies), by striving for sustainability (by lowering emissions and external costs of traffic), and by adding more benefits for its users. The current revision is an opportunity to develop this work even further.

KEY POLICY MESSAGES

Based on our experiences with the TEN-T objectives, ERRIN would like to highlight the following key policy messages for the revision of the common provisions on urban nodes, research, and innovation in the TEN-T guidelines.

Giving urban nodes the same importance as other priorities in the TEN-T guidelines

This would ensure that they meet current and future challenges while providing smart, efficient, and sustainable transport. Several of the EU's overarching policy objectives – the Green Deal, digitalisation, and the recovery response to the COVID pandemic – cannot be achieved without a stronger integration of urban nodes and ITS in European transport policy.

Expanding the definition of urban nodes and introducing specific criteria

To accelerate the transformations needed in the transport system to meet the 2030 and 2050 objectives of TEN-T policy, the definition of urban nodes should be expanded, and a new set of selection criteria needs to be implemented.

Strengthen innovation in urban nodes to achieve a more seamless, sustainable, and efficient TEN-T network

Innovation has a crucial role to play in making mobility in the TEN-T network more seamless, sustainable, efficient, and fit for the future. Some innovation nodes for clusters working on the newest sustainable, clean, autonomous, and connected mobility solutions of EU added value could be introduced as a new element of the TEN-T guidelines (Annex 2.3).

Better coordination between European Commission initiatives

The Commission has taken several initiatives to address transport-related issues. The new TEN-T guidelines should help achieve the ambitious goals set out by these various initiatives and communications, including the 2011 White Paper on transport, the Urban Mobility Package, the Low Emission Strategies, the *A Clean Planet for All* and *Europe on the Move* strategies, the European Green Deal, etc.

Further develop synergies with other EU-programmes

These include the energy and telecom sections of the Connecting Europe Facility, the Horizon Europe programme with a special emphasis on the cluster on climate, energy and mobility, the European Partnerships with a link to transport (especially CCAM and 2ZERO), as well as green financing in the InvestEU. Maximising the potential of this vital funding stream will ensure that urban nodes are able to meet current and future challenges, while providing smart, efficient, and sustainable transport. Strengthening the urban nodes priority will also increase the visibility of European policies towards citizens.

Green financing

The revised regulation should encourage mature infrastructure projects with an exemplary environmental standard that are able to attract green financing. In particular, this would help ensure

that the deadlines for the implementation of the network are respected. As such, the objective of efficiency is one of the four objectives of the trans-European transport networks specified in Article 4 of the TEN-T Regulation. According to point (b)(iv), this objective requires the cost-efficient application of innovative operational concepts. These operational concepts could also include the question of new project steering structures essential to achieve this efficiency objective.

THE IMPORTANCE OF URBAN NODES IN TEN-T POLICY

The European Commission has identified several challenges faced by the European transport industry¹:

- Transport demand is increasing and the trend towards urbanisation will continue.
- The EU transport sector, in particular road transport, depends almost exclusively on oil as an energy source.
- The EU is committed to making Europe the world's first carbon-neutral continent by 2050. The transport sector – a major polluter responsible for a quarter of the EU's greenhouse gas emissions – will have to make considerable efforts to achieve this objective.
- One of the most serious problems linked to transport is congestion, particularly on roads, which compromises accessibility and adversely impacts the economy. This problem, which costs Europe around 1% of its GDP each year and causes significant emissions of carbon dioxide and other pollutants, needs to be addressed.
- Transport efficiency needs to be increased, which means encouraging more responsible travel behaviour. Europe needs to combine all existing means of transport and networks to a greater extent to optimise their use and capacity, rather than concentrating on a single mode of travel.
- Infrastructure: the aim is to complete the trans-European transport network, to better integrate road, waterborne, rail, and air transport, to remove bottlenecks, and to build missing links, particularly cross-border links.
- Vision Zero: while road safety in the EU has improved greatly in recent decades (and EU roads are the safest in the world), the number of deaths and injuries is still far too high. This is why the EU has adopted the Vision Zero and Safe System approach, to eliminate deaths and serious injuries on European roads.

Currently, 80% of journeys in Europe take place in urban nodes (Eurostat) meaning urban nodes are at the heart of the decarbonisation and pollution efforts that need to happen to meet our climate and

¹ White Paper on transport (2011), the Urban Mobility Package, the European Strategy for low-emission mobility, the 'A Clean Planet for All' and 'Europe on the Move' packages etc. all confirmed by the European Green Deal.

environment targets. Similarly, according to European Commission data, congestion costs amount to approximately €100bn annually and is to a large extent concentrated in urban nodes. **Seeing that mobility issues are increasingly concentrated in urban areas, the priority of urban nodes must be strengthened and clean, efficient, and sustainable transport projects in urban nodes need to be accelerated.**

Based on the statistics above, the 21st century is the century of the metropolitan areas, which also gather the major part of the economic development and innovation potential. Almost all, 98%, journeys are less than 80 km long and focus on urban areas in France, this is similar in other EU countries.

This phenomenon of urban concentration generates noticeable difficulties in peri-urban areas and urban centres with sometimes excessive use of individual vehicles – for access to the city centre due to urban sprawl but also for relatively short distances travelled by private cars in the city centre.

Metropolitan areas are faced with major local mobility challenges, particularly in terms of:

- Accessibility: hundreds of thousands of cars enter urban areas every day, with situations of saturation markedly causing loss of time due to congestion and pollution;
- The environment: transport accounts for 30% of CO₂ and pollutant emissions at the EU level;
- Quality of life in urban centres (accidents, noise pollution, congestion, etc.) with a need for a modal shift from passenger cars to combined transport and soft and shared modes; and
- Management of public space: all these issues, which are sometimes contradictory, focus on a constrained public space that must be shared between all modes of transport (soft modes, CT, passenger cars, urban freight) and other uses (commercial activities, places of relaxation, etc.).

The introduction of the concept of urban nodes in 2013 was incredibly important to create the more sustainable and connected transport system that we have today. With this revision, there are opportunities to use the capacity of urban nodes further and to contribute to an integrated European transport system by strengthening the priority. This would also make sure that sufficient resources are allocated to support urban nodes projects.

For example, urban nodes can facilitate multimodality and the modal shift for cleaner transport modes both for passengers and freight, remove bottlenecks (urban nodes are the places of congestion in Europe), and clean (fuel) infrastructure. Reducing the use of individual cars, through local, regional, national, and European infrastructures connected to structuring road networks, the deployment of urban ITS solutions optimising traffic, favouring multimodality and intermodality, and dynamic car-sharing are the most important levers to achieve the EU's environmental transition objectives.

Significant contribution to the Green Deal objectives

The European Commission has clearly aimed to decarbonise the transport system since the publication of the 2011 White Paper on transport. The objectives of the Green Deal are even more ambitious: *“Transport accounts for a quarter of the EU’s greenhouse gas emissions, and is still*

growing. To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050. Road, rail, aviation, and waterborne transport will all have to contribute to the reduction. Achieving sustainable transport means putting users first and providing them with more affordable, accessible, healthier, and cleaner alternatives to their current mobility habits”.

Transport thus needs to become drastically less polluting, especially in cities. A combination of measures should address emissions, urban congestion, and improved public transport. Furthermore, there is great potential in increasing the support provided to innovation of operating systems.

To reach these objectives, increased priority needs to be given to the urban nodes priority in TEN-T policy, which has up until today not been sufficiently supported. Consequently, this is also represented in the funding, as only 2% of Connecting Europe Facility (CEF) funds have been allocated to projects set out to achieve the aims of Article 30. If we are to successfully fulfil the objectives set out in the Green Deal and in the *A Clean Planet for All* strategy, efforts need to be redirected towards urban nodes.

Key position of transport in the renewed EU Industrial Strategy and lessons learned from the COVID pandemic

Urban nodes are the backbone of Europe’s economic activity and their interconnectivity is essential. Connections between long-distance transport infrastructure and the local, regional, and national transportation networks in urban nodes are important to enable smooth transfer functions on TEN-T journeys and to help tackle bottlenecks in and around urban nodes for passengers and goods.

The EU Industrial Strategy intends to transform the industry to become greener, more circular, and more digital with supporting our SMEs to keep Europe sustainable and competitive. The resulting job creation must also be taken into account as a factor increasing the pressure on the transport system in urban nodes. For example, the implementation of this European strategy will lead to new regional ecosystems being built on the successful template of already existing industrial alliances, such as the European Battery Alliance, a new European Clean Hydrogen Alliance, alliances on low carbon industries, industrial clouds and platforms, and raw materials should be created when ready.

The first lessons learned from the COVID pandemic by the national and regional authorities will also include the relocation of key industrial production to the EU. A greater pursuit of onshoring critical supply chains in Europe has the potential to increase transport pressure in urban areas. This is because it will lead to more goods and people movement, especially in urban nodes, to support those supply chains within the EU’s borders. Hence, ensuring sustainable transport in urban nodes is essential and must be prepared for as soon as possible.

ERRIN'S VISION – THE FUTURE OF THE TEN-T POLICY

Urban nodes are essential for the effectiveness of European transport corridors as well as for regional development and social cohesion; they carry similar weight for freight and logistics acting both as connecting points and “first and last miles” of long-distance journeys.

These reasons show evidence that urban nodes will carry even more importance in the future to provide a clean, efficient, and sustainable transport system to the benefit of all citizens. As such, urban nodes are part of the DNA of the transport policy and equal priority should be given to urban nodes as other priorities in the regulation.

A more complete definition of urban nodes

The current definition of urban nodes needs to be strengthened to increase awareness across the EU of what they are and what they could be. Urban nodes can be cities, industrial areas, agglomerations, or metropolitan areas – they also need to mirror the transport-related interdependencies of their respective Functional Urban Areas (FUA). They are territories where urban, regional, national, and European networks interconnect to offer an integrated, clean, smart, and sustainable transport network. Urban nodes are thus by definition innovative.

The planning methodology for the selection of urban nodes in TEN-T used by the European Commission in 2013 uses the following criteria:

- The capital city of each EU Member State and cities with EU capital function;
- Every "Metropolitan European Growth Area" (MEGA) in the ESPON9 Atlas 2006;
- A conurbation or city cluster which, including the corresponding environs as defined by the corresponding LUZ ("Larger Urban Zones", according to Urban Audit and EUROSTAT), exceeds one million inhabitants;
- The main city of an island or a of group of islands forming a NUTS1 region with at least one million inhabitants; and
- The cities relative to core network seaports if their population exceeds 200,000 inhabitants in the corresponding LUZ.

Challenging issues in the field of freight and logistics, passenger flows, sustainability, liveability, and especially integration of urban nodes in the TEN-T network require an integrated policy answer, which often go beyond the city level since such challenging issues also comprise the peri-urban and regional areas surrounding cities. **The concept of an integrated transport system for each urban node, especially journeys from the city centre to the peri-urban areas where many of the daily commutes take place, play a key role in the Urban Area's planning. Therefore, the scope of an urban node should zoom out on the urban-regional or the FUA as well. Doing so would lead to a better integrated and decarbonised transport system.**

For example, one of the issues addressed in the recommendations toolkit from the Horizon 2020 project Vital Nodes is that solutions for challenges in urban nodes can be found elsewhere on the

corridor in an FUA, as the tri-modal terminals in Venlo (NL) and Lauterbourg (FR) illustrate by consolidating freight for Rotterdam (NL) and Strasboug (FR) respectively. This FUA is an important link between urban nodes and its policy domain (SUMP guidelines, Urban Mobility Package) and TEN-T and its policy domain (TEN-T guidelines)².

Moreover, the creation of new infrastructure and the good connection between these infrastructures in an urban setting such as an FUA that will have a positive effect on the TEN-T network should be considered. This integration of infrastructures will make it possible to achieve the objectives for 2030 and 2050.

Go beyond the current formal criteria of urban nodes

To accelerate the progress towards reaching the 2030 and 2050 objectives to complete the core and the comprehensive network, the criteria of urban nodes should be expanded upon. To do so, a new set of criteria needs to be introduced that should be based on the potential urban node having an industrial hub, clearly work towards EU policy objectives (the Green Deal, digitalisation etc.), have a high quality Sustainable Urban Mobility Plan (SUMP) with clearly anchored and prescriptive policies and actions, as well as developed intermodality and system integration.

It would also be useful to consider projects with a strong socio-economic impact. This would allow:

- To achieve many objectives showing a strong added value for transport policy, such as filling “missing links”, intermodality, and sustainability; and
- To achieve transversal EU objectives, such as a strengthening of economic, social, and territorial cohesion, developing a safe and sustainable mobility, the accessibility and connectivity of all EU regions, and strengthening economic growth and competitiveness in a global perspective.

Other criteria that should be considered are:

- Transformation nodes: despite a heavy industrial past, these nodes are reinventing themselves by turning to the path of change and by developing new economic activities;
- Modern industrial nodes: bringing together everything to both multinational business platforms and local companies that export to foreign countries, these nodes are also distinguished by high levels of technological innovation;
- Research and innovation nodes: widely connected to international networks, research and higher education centres include business activities related to science and technology; and

² https://vitalnodes.eu/wp-content/uploads/2020/01/Vital-Nodes_D3.5-Vital-Nodes-Toolbox_PU_20190628.pdf

- Visitor economy nodes: characterised by a sector of services essentially oriented towards tourism, these nodes manage the flows of a considerable number of people from the interior of the country or from all over the world.

In a broader sense, ERRIN raises the question of the relevance of a list of urban nodes and whether criteria and a definition of their functionality would be more adequate in order not to ignore any valuable nodes.

Strengthen innovation in urban nodes to achieve a more seamless, sustainable, and efficient TEN-T network

Innovation in urban nodes is key to meet the challenges of building a modern integrated transport system that meets the challenges of decarbonisation, efficiency, and inclusive growth. The Connecting Europe Facility and Horizon 2020 funded studies, pilots, and projects have already contributed significantly to making transportation in and around urban areas more effective, greener, and smarter. By strengthening innovation in urban nodes this transformation would be accelerated and the achievement of the 2030 and 2050 objectives of the TEN-T would be sped up.

The future of mobility where the whole chain of the transport system, including first and last mile journeys, would also benefit from strengthening innovation in urban nodes. Similarly, it would contribute to the decarbonisation of the transport system by addressing alternative fuel infrastructure and vehicles (taking into account the Clean Vehicle Directive) and new energy sources. Accelerating the deployment of alternative fuel infrastructures would also increase the resilience of the transport system, making it less dependent on a single mode or fuel.

Regional and local authorities in the agglomerations of urban nodes are nevertheless still facing a challenge in paving the way for (the public acceptance of) new innovative modalities, while the density and frequency of transport flows are going up in a growing urban areas and the accessibility and connectivity of urban areas are under constant pressure.

The TEN-T regulation recognises the importance of telematic applications, new technologies, and innovation, to strengthen this section in the guidelines the following could be added:

- Introduce some innovation nodes for clusters working on the newest sustainable, clean, autonomous, and connected mobility solutions of EU added value to be selected by Member States as a new element of the TEN-T guidelines (Annex 2.3). These innovation nodes could cover the most important European clusters for green, automated, and smart mobility essential for testing, standardisation, and certification of vehicles to obtain seamless, secure, and safe transport possibilities across the TEN-T network.
- Enrich article 33 of the TEN-T regulation on new technologies and innovation by adding the intention to experiment and deploy sustainable, automatic, and autonomous modes of transport.

- Add the dimension of smart mobility and new future-oriented mobility solutions to article 30 of the TEN-T regulation listing specific challenges for urban nodes in the TEN-T context. Innovation in telematic and smart applications as well as connected, automatic, and autonomous mobility solutions have an important role to play in addressing congestion and pollution in urban nodes.

Digital applications of traffic and travel information are becoming increasingly important in managing urban traffic flows both for passengers and freight deliveries. In this field there are several investment opportunities, which would effectively make traffic flows and multimodal transitions more seamless and sustainable in urban environments as well as provide solutions for issues related to urban bottlenecks. Digital applications will also play a big role in improving the resilience of the transport system, especially when it comes to the development of sustainable and clean automated and connected vehicles.

These digital investments are also relatively low-cost as opposed to large-scale investments in mobility infrastructure. Therefore, **the development and deployment of various digital mobility solutions** such as standard traffic management systems at the European level, mobility as a service applications etc. should be further highlighted as a relevant urban mobility dimension in the TEN-T guidelines.

With the Commission strategy on sustainable and smart mobility set to be published later this year, there are clear opportunities to include synergies with the revised TEN-T guidelines, urban nodes, and innovation in urban nodes.

Improve multi-level governance for better implementation

Improving the governance of TEN-T policy and urban nodes is a prerequisite for the good implementation of future projects. Regional and local authorities play a key role in the management and development of transport systems and as such the empowerment of them should be strengthened.

One apparent way to do so is to further involve local and regional authorities in the proposal selection procedure in the Connecting Europe Facility, considering:

- The essence of the network itself is changing: the central network will be multimodal, with new connections in ports and airports, and a strengthening of environmental integration – it will also attract most EU financing.
- The Commission aims to end bottlenecks in the transport system – local and regional authorities will have a role to play in order to make European freight and passenger flows more seamless. Multi-level governance should include all authorities – from the European Union to the local level in order to improve the coordination of projects. The local and

regional authorities play an important role in the organisation and financing of the transport system. For these reasons, they must be involved in the governance of urban nodes.

- The role of regional and local authorities in cohesion policy and their increasing importance as regards political support and project financing.
- The increased need to support innovation in metropolitan areas: projects implemented will accelerate the crucial modal shift through sustainable modes. Shifting away from Member States as main addressees and bringing regional governments in will create the opportunity to better capitalise on the potential of regional innovation ecosystems. ERRIN members have all developed their profound networks of research and innovation actors that are vital in demonstrating, introducing, and mainstreaming innovative mobility solutions.

Increased emphasis on intermodality and achieving a modal shift

Intermodality will boost the modal shift from private and more pollutant modes to those that are more likely to fit into the goals of the Green Deal. These modes must be the key to increase transport efficiency.

Urban areas gather most of the congestion in Europe and constitute the majority of European bottlenecks. Unfortunately, the implementation of intermodality has been slow. For example, in the freight transport sector work remains to achieve the objective of implementing multimodal, sustainable, and efficient services that address user needs. Despite major investments, the modal shift remains low for the rail industry and the shift towards waterway transport remains marginal.

Thus, more sustainable modes of transport, like rail and innovative approaches to support the modal shift for passengers and goods, should play a larger role in a TEN-T policy aligned with the Green Deal and it must be strengthened in the urban nodes. To achieve this, an explicit link of these goals to the tasks and functions of urban nodes in article 30 of the regulation would be helpful. To that end, we suggest adding an objective that stipulates increased feasibility of a modal shift towards greener railway and waterway transport solutions. In addition, internalising the cost of all transport modes, and consequently taxation related to this cost, could be a positive tool to reduce the share of less efficient modes of transport in terms of socio-economic rentability and sustainability.

Currently, the projects supported by the Connecting Europe Facility are mainly large infrastructure ones, which often do not leave the project phase. Supporting equipment that aims to improve and reduce bottlenecks in urban areas such as ports, waterway, and rail connections would be more efficient in achieving a modal shift. The Connecting Europe Facility, supporting urban nodes projects, would also become the instrument of the environmental transition and the European recovery plan.

Give equal priority to urban nodes as other priorities in the regulation

As outlined previously, urban nodes are key in achieving both the Green Deal objectives and in facilitating the onshoring of key industrial value chains in Europe related to the economic recovery from the COVID-19 pandemic. Strengthening the priority of urban nodes would:

- Reinforce the capacity and efficiency of existing corridors;
- Multiply the return on investment of long-distance infrastructure;
- Support the decarbonisation of the transport system and address congestion;
- Increase the visibility of European policies for citizens; and
- Improve the international accessibility for urban regions.

ANNEX 1

Examples of projects financed within the 2014-2020 framework

International connectivity of urban nodes – H2Nodes

The H2Nodes project's goal is to work on the evolution of a European hydrogen refuelling station network by mobilising the local demand and value chains. The project supports extended partnerships along the North Sea - Baltic core network corridor, to put in place a chain of hydrogen refuelling stations and boost demand for fuel cell electric vehicles (FCEV). Cooperation is also happening to connect HRS on North Sea - Baltic and Scandinavian - Mediterranean core network corridors.

The focus is on market-side innovation with real life deployment and great efforts are put into mobilise regional and local actors across the value chain to drive the business case, as well as to provide locally produced renewable hydrogen for real life tests. On the public side, procurement is important to increase the operation of public transport units powered by fuel cells and other FCEVs for real life tests.

More information can be found [here](#).

Connectivity of urban nodes – MEGA-E

With the charging network of MEGA-E, Allego facilitates several forms of e-mobility and supports emission free travelling not only within, but also from one metropolitan area to another. The creation of so-called 'charging hubs' with combined multiple charging solutions in the same location to charge electric vehicles is unique. The charging hubs have an optimal impact on and offer effectiveness for both the energy and mobility system. The MEGA-E project builds on the vision developed by the EU in 2009 when the innovation cluster in the TEN-T/CEF program was developed. The project is among the first to implement this at a pan European scale.

More information can be found [here](#).

Structures in the functional urban area matter – the *Regionaltangente West FrankfurtRheinMain*

Although FrankfurtRheinMain is a polycentric region, most rail connections in the public transport system still follow a star-like pattern centred on the urban core. A lot of regional commuters therefore have to travel via the Frankfurt main station, adding unnecessary transport volume to the shared-used rails in one of Europe's most relevant rail nodes. The solution: A new 'tangential' connection in the west of Frankfurt, linking the city and several municipalities in three counties, with 26 stops on a 50-kilometre route. Because of this *Regionaltangente West* smartly shifts transport flows in the Functional Urban Area and thereby creates new capacities for the long-distance journeys via the Frankfurt urban node. The EU funds the planning with €7,6 million in the current CEF programme. As from 2026, up to 50 000 commuters will use it day-by-day.

More information can be found [here](#).

ARMIS: Air Rail rapid Metro Interconnection System

The project is part of the Global Project 'Grand Paris Express' (new high capacity metro network, linking up the main centres of the metropolitan area of Paris and Île-de-France). It concerns the preparation of Preliminary Design Studies (PDS) for 3 urban express lines. Line 14 will serve the Gare de Lyon railway station and the new section to the future Orly TGV station, line 17 will serve Le Bourget and Charles de Gaulle airport (CDG) and line 18 will serve Massy TGV station and Orly airport. The action is part of the Atlantic and the North Sea–Mediterranean Corridor. The Action will lead to improved connectivity, reduced travel time and sustainability. It will also improve transport flows between the EU Member States through increased accessibility of two major European airports within Paris.

M2I (Integrated mobility for the Paris/Île-de-France Region) – Building excellency in mobility

M2I is a project dedicated to developing smart mobility digital solutions and address users' need for reliable information. Situated on the North Sea Mediterranean and Atlantic corridors of the TEN-T network, the action, under development, supports the implementation of digital strategy for multimodal passengers' information ticketing services, and public authorities' management of traffic in the Paris Region. It is part of a global project promoting modal shift from individual car to public transport and other modes (bike, shared vehicles). The action aims at improving the reliability and safety of public transport and contributes to strengthen innovation in sustainable mobility. The activities rely on various datasets (real-time, predictive data) using big data tools and contribute to the open data process. They also rely on various tools to help users choose the most appropriate transport mode. These tools are developed by private stakeholders and are gathered in a unique traveller information service, which will enrich Île-de-France mobility's (the Regional transport Authority) data portal in order to build one of the major mobility data portals in the world. This project was selected by the Commission in response to the CEF call launched in 2016 and received funds to promote innovative transport technologies.

Connecting Stuttgart–Ulm rail project including Stuttgart21

The rail project Stuttgart 21 is the largest upgrading concept for public rail transport in the state of Baden-Württemberg since the 19th century. The project entails the complete restructuring of the Stuttgart rail node. In total, three new stations will be constructed:

- A new Stuttgart main station. The city's main station will be converted from a terminus station where trains end into a through station underneath the ground.
- Moreover, a new suburban train station will be built in the new residential quarter that is part of Stuttgart 21.
- Last but not least, the airport and trade fair station will link the region to the south of the city and to long-distance and regional transport routes.

Furthermore, the project will open up unique urban development opportunities in Stuttgart. Since the railway tracks will move underground as well, space for the development of a whole new neighbourhood right in the centre of Stuttgart will be created. This will result in more green space, new housing, and jobs. The project thus improves the regional competitiveness and the future viability of the city.

Especially concerning regional transport, the project brings great benefits for Stuttgart. Shorter travel times, better accessibility, and more convenient connections, benefit passengers and companies of the Stuttgart Region. After all, mobility is a crucial location factor in our export-oriented economy.

More information can be found [here](#).

ANNEX 2

Example of projects could be co-financed by the CEF2.0 under the new TEN T guidelines

Clean inland shipping alternative fuels infrastructure connected to urban nodes' clusters on hydrogen and e-charging

On the Rhine-Alpine corridor, possibly within the RH2INE initiative, we work on specific projects (currently LIFE and EFRD) promoting alternative fuels infrastructure and support mechanisms for shippers to change to clean fuels. However, this needs a corridor approach. This project would:

- improve EU transport
- decarbonise inland shipping
- improve air quality in urban nodes
- support economic development in urban nodes in line with the Green Deal (hydrogen, e-mobility, and shipping clusters).

Passenger train connections – connecting urban nodes international passengers

The Amsterdam-Arnhem-Berlin ICE connection, in addition to the current IC connection, would improve international accessibility for Europe's urban nodes, thereby averting short flights. In addition, Europe's core corridors would be interconnected more strongly, as the connection would benefit both Rhine-Alpine and North Sea – Baltic.

Expanding the definition of urban nodes – possibilities for clean, smart, and efficient projects for better interconnectivity

The metropolis of Bordeaux counts more than one million inhabitants and a high number of commuters from Arcachon, Langon, Libourne, etc. This situation leads to serious problems at local level: a high congestion on the road network and an increase of greenhouse gas and pollutants emissions. The creation of new tramway lines and a ring road have not reversed the trend. The rail

mode is the only solution which could improve significantly mass transit in the urban area, thanks to a network of 20 stations.

It is against that background that the Nouvelle-Aquitaine Region and Bordeaux Metropolis enrolled in the "**Metropolitan RER**" project. A strategy has been defined at the end of 2018 to gradually and progressively set up a transport service within 10 years. The objective is to improve and increase services for passengers and to make the rail offer more reliable (frequency, number of passengers) and consistent with the urban public transport offer. A road map with a 2025-2028 timeline has been prepared for the rail infrastructure in order to answer the everyday mobility needs of passengers and decrease significantly road congestion.

Part of the project, the operation of the railway central station of Bordeaux will be optimised. The station will not be managed anymore as a last stop but in an East/West and North/South perspective. Furthermore, the project plans to reopen several rail stations to improve the connection with the urban network and with the main areas of employment in the metropolis. Finally, urban and regional rail ticketing systems will be combined in the geographical area of the Metropolitan RER to ease behavioural changes.

The TEN-T High-Speed Rail Line projects between Bordeaux and Toulouse and between Bordeaux and Spain will bring territories and urban areas closer. The works planned on the existing line South of Bordeaux (AFSB project) will indeed increase the frequency of suburban services, for example on the busy line between Bordeaux and Arcachon, thanks to the creation of a third line between Bordeaux central station and Saint Médard d'Eyrans (12 km South of Bordeaux).

Investing in the modal shift: new long-distance rail tunnel Frankfurt

It is a bold vision that the federal government, Deutsche Bahn, and the regional actors in FrankfurtRheinMain share: a new tunnel with an additional underground central station for the long-distance trains underneath the Frankfurt city centre. Today many high-speed trains rush through the TEN-T – but then have to wait before entering their final destination in Germany's most important rail hub. This shall change by 2040. The €3,5 billion investment will not only shorten travel times and make the trains more reliable, but – as the already existing infrastructures on ground shall be maintained – raise capacities by an estimated 20%. This makes the project a prerequisite for a modal shift from road and aviation to rail, necessary to fulfil the Green Deal objectives in transport of passengers and goods.

Multimodal exchange hub of La Défense

La Défense is the EU's largest business district. It comprises around 180,000 jobs and is served by a multimodal hub used by several train, metro, tram and bus lines, as well as 12 parking lots – traffic originates from two motorways and the local road network centred around the area.

La Défense currently faces many issues, all linked to oversaturation. Roads are heavily congested, tram and metro stations receive more passengers than they can safely handle, bus terminals cannot accommodate electric and NG vehicles, among other issues. A new train line and a new metro line are expected in 2022 and 2030, respectively. A 2015 study conducted by the French government has

revealed that the necessary renovation of the hub would require investments totalling more than €800 million – 700 million more than the usual maximum cost of renovation projects in Île-de-France transport hubs.

Increasing the priority given to urban nodes in the TEN-T Regulation could:

- Significantly increase the funding received by projects such as La Défense and would thus allow a quicker path towards decarbonisation goals.
- Improve connectivity of regional hubs to European corridors (Atlantic and North Sea-Mediterranean corridors) – therefore achieving TEN-T objectives.
- First and last mile solutions in the area could be considerably improved, which would have a direct impact on congestion and pollution.