THE INFRASTRUCTURE: GENERAL OVERVIEW

The Lyon-Turin line is a **freight and passenger new railway line** that covers 270 km, 70% of which in France and 30% in Italy.
It is the central link of the **Mediterranean Corridor**, one of the 9 axes of the European TEN-T transport network, which extends for 3,000 km, connecting 7 EU corridors from East to West.

The line is divided into three sections:

- the common cross-border stretch between Italy and France, from Susa (Piedmont) to Saint-Jean-de-Maurienne (Savoy), under the responsibility of the Italian-French public promoter TELT, whose main project is the Mont Cenis **base tunnel** of 57.5 km of length, currently under construction;
- the Italian part, from Turin to Bussoleno (Susa Valley), under the responsibility of RFI;
- the French part, from Saint-Jean-de-Maurienne to Lyon, under the responsibility of the SNCF.

Where the works are located

The European Union project foresees 9 TEN-T (Trans-European Transport Network) networks to encourage the movement of people and goods via an environmentally friendly mode of transport: rail. Among these networks, there is the Mediterranean Corridor, from Budapest (Hungary) to Algeciras (southern Spain), which includes the Lyon-Turin line.

The Lyon-Turin project:

- guarantees a connection, south of the Alps, between Western and central- eastern Europe;
- aims to promote economic exchanges and strengthen the competitiveness of Mediterranean European countries;
- is a **freight and passenger railway network**, which also intersects with the most important sea and river ports, major cities and airports.

The long-term strategic objective is to create the **"European Metro Line"**, discouraging the use of road transport, in favour of lower greenhouse gas emissions. Based on this objective, **7 base tunnels** have been foreseen in Europe to facilitate the crossing of the Alps: Mont Cenis (57.5 km), Gotthard (57 km), Brenner (56 km), Koralm (32 km), Semmering (27 km), Ceneri (15.4), Lötschberg (34.6 km).

The international agreements

The realisation of the Lyon-Turin line is established by **four international agreements between Italy and France** (1996, 2001, 2012 and 2015, supplemented by the Additional Protocol of 2016).
Between the end of 2016 and the beginning of 2017, the Italian and French parliaments ratified the agreement, allowing the final works to start. With this step, the decision-making procedure for the work, in Italy and France, was completed.

THE CROSS-BORDER SECTION

The cross-border section of the Lyon-Turin line is the stretch between Susa (in Italy) and Saint-Jean-de-Maurienne (in France); it is 65 km long, 89% of which in tunnels. Most of the systems above ground are located in already populated areas.

The public promoter **TELT**, a bi-national company, has been entrusted with the mandate by the Italian and French governments for its realization and subsequent management.

The participatory project design

The current route of the cross-border section is the result of a participatory planning.
In Italy, it was managed by **the Lyon-Turin Observatory**, established by the Italian government in 2006 after the violent protests in Venaus against the first track of this work.
After 205 work sessions and 300 auditions of technicians and experts, and 10 route alternatives, **a definitive project** route was established in 2013 and approved in 2015.
Moreover, **the work was planned to be carried out in phases**: the first phase, the so-called "low cost" project, involves: the construction of the base tunnel, the upgrading of the historical line capacity between Bussoleno and Avigliana, the construction of the mixed freight/passenger tunnel from Avigliana to the logistics platform in Orbassano, works for adapting the Turin hub.

A **Débat Public** (**Public Inquiry**) took place in France. An independent commission collected comments and needs of the local area through public events and meetings with all stakeholders. In 2006, it gained a favourable opinion from the Commission followed, in 2007, by the **declaration of public utility** for the project by the French Prime Minister.

The base tunnel

The fundamental element of the new line is the tunnel at the base of the Mont Cenis, the longest railway tunnel in the world.
It is a twin-tube single-track tunnel, of 57.5 km of length (of which 45 km in France and 12.5 km in Italy) connecting the international stations of Saint-Jean-de-Maurienne and Susa, where it connects to the existing line.
150 years after the inauguration of the **Fréjus railway tunnel** (at an altitude of 1300 m), where the current historical line passes, a turning point to comply with current transport standards.

The reasons why

The new tunnel transforms the current mountain line into **a plain railway**, making the **rail transport** more competitive. Trains that travel on level ground allow energy savings and higher speeds. In the Italian-French section, the historic line does not currently comply with **international transport standards**: it climbs the mountain with **a slope** of up to 3%, so the trains need up to 3 locomotives, with a 40% higher energy cost; the diameter of the old Fréjus tunnel, inaugurated in 1871, is smaller than that required by current international standards and it has a single-tube which does not meet current safety standards.

TIMING AND COSTS

Realisation times

The completion of the main works of the project is scheduled for 2030, which will be followed by a two-year testing and pre-commissioning phase before the actual opening.

Its realization involves three phases:

- assignments, engineering and preparatory works
- civil works
- plant systems and pre-operation activities.

Costs and funding

The cross-border section cost amounts to € **8.6 billion**, certified by an international group.

TELT has undertaken to respect the budget and put in place an internal monitoring system.
This infrastructure is funded as for 40% by the European Union, as for 35% by Italy, and as for 25% by France).

The European contribution is effected through the Grant Agreement, the agreement drawn up between the EU, Italy and France within the framework of the Connecting Europe Facility (CEF).

In Italy, the funding is provided by "construction lots" which include various activities and works according to the executive phases. To date, four out of five construction lots have been financed.

France, instead, has an annual financing mechanism: each year it commits the sums for which it is responsible through specific agreements signed between the Agence de financement des infrastructures de France (Afitf) and TELT, on the basis of the planning provided by the public promoter.

Call for tenders

The works are organised into **81 calls for tender** distributed over **12 operational construction sites:**

- 9 for works on the alpine crossing, subdivided by geographical area (4 in Italy and 5 in France) between the interconnections with the old line in Italy and in France
- 2 for the reuse of excavated materials in Italy and France
- 1 for the technological systems and safety.

In detail:

- 45 calls for tender concern civil works, divided into four ranges (up to € 5 million, between € 5 and 50 million, between € 50 and 500 million, and between € 500 million and € 1.300 billion)
- 36 calls for tender concern engineering services.

Besides the largest amounts, several contracts worth less than € 50 million are foreseen in order to facilitate the direct participation of small and medium enterprises in the works.

THE REASONS FOR REALISING THE LYON-TURIN LINE

Environment

When the Lyon-Turin line will be operational, over 1 million lorries used for international road transport will no longer be present on alpine roads**, thus reducing CO_2 emissions by 3 million tons per year.**

The reduction of polluting emissions in the Alpine region is one of the primary objectives set by **COP21,** the Climate Conference held in Paris in 2015, during which the need to transfer 30% of freight to railway transport by 2030 and 50% of it by 2050 was reiterated.

Transport and economy

It is necessary to make the railways competitive for the transport of freights and passengers, and to increase **connectivity between Italy and the European railway networks.**
The existing historical line, climbing over 1,300 meters and with a tunnel dating back to 1871, does not meet the **international transport standards** and involves an energy cost which is 40% higher than the one of a line without any slope.
Moreover, the Mediterranean Corridor, to which the Lyon-Turin section belongs, concerns 18% of the European population in regions representing 17% of the EU GDP. To **support the economic development** of these territories, an efficient and green infrastructure is essential.

Italy-France interchange

In general, cross-border projects are those that give the greatest benefit to the European economy, **with a multiplier 3 times higher** than the average of the 9 TEN-T corridors.
France and Italy are the second and third economies of the European Union and respectively the second commercial partner of one another.
The economic exchange involves **over 45 million tons of goods** per year, mainly transported by road (92% travels on lorries), and represents a total of € 103 billion (Source: ISTAT 2017).

Advantages for freight transport

- **Greater interchange**: with the creation of a tangible alternative to road transport, it will be possible to intercept the increase in the circulation of goods, as seen through the other Alpine passes
- **Greater capacity**: the extended compliance with the European standard will allow the passage of trains with capacities of up to 1,500 tons, compared to the 600-700 tons seen today
- **Ecology**: a train eliminates 60 heavy goods vehicles travelling on the road networks
- **Savings**: rail transport costs decrease over time; road costs increase.

Advantages for passengers

- **More trains**: the project foresees **22 long-distance trains a day**, compared to the 6 TGVs travelling today on the historic line between Turin and Lyon (Source: Volume 11 of the Observatory)
- **Less travel time**: Lyon-Turin (with no intermediate stops): 1h 47", against 3h 47". Milan-Paris: 4.5 hours instead of about 7 hours; Turin-Paris: about 4 hours, which is about an hour and a half less
- **More connections**: the departures-destinations will multiply for passengers on different European routes, encouraging new passengers to travel by train, using the corridors and their connections.

THE PUBLIC PROMOTER: TELT

Company profile

Tunnel Euralpin Lyon Turin is the Public Promoter in charge of the construction and management of the Lyon-Turin cross-border section. A company established under French law on 23 February 2015 according to **international agreements** that define the realization of the line itself. The above agreements were signed by the two **founding partners: the French government and Ferrovie dello Stato italiane (Italian State Railways).** TELT succeeds Lyon Turin Ferroviaire (LTF SAS), former Public Promoter involving SNCF (France) and RFI (Italy), and, since 2001, has been in charge of the studies, investigations and preliminary works for the shared Italian-French part.

Corporate and management setup

The corporate set-up is structured as follows:

- 50% Ferrovie dello Stato SpA (FS) for Italy;
- 50% French State.

The Board of Directors consists of 10 members with voting rights appointed by both countries, plus one representative of the European Commission, without voting rights.
The Board includes as observers without voting rights:

- a member from the Auvergne-Rhône-Alpes Region (France);
- a member from the Piedmont Region (Italy).

The French State appoints the Chair and the Italian State appoints the General Manager choosing among the Board members.
The President of TELT is Daniel Bursaux.
The General Director is Mario Virano.

Team

200 people from both Italy and France currently work for TELT, with an average age of 45 and with an equal distribution between genders.

The team consists of 70% engineers who have worked on infrastructure projects worldwide, participating in **the design and engineering of a total of 1,150 km of railways and 454 km of tunnels.**

Supervisory Bodies

The Company has established two control bodies (the **Contract Committee and the Permanent Monitoring Service**), which respectively monitor the contract awarding procedures for compliance with EU law and the correct use of funds.
They are both chaired by French representatives and are composed of 12 members, 6 appointed by each government, for a renewable term of 5 years.

THE COMMITMENTS

Global compact

TELT takes part In **the United Nations Global Compact** to sustain its goals and promote its values among its stakeholders:

- human rights
- international occupational standards
- environment
- fight against corruption.

Environment

The Lyon-Turin project was conceived with **environmental objectives** and refers to several initiatives launched by the European Union over the years, including:

- the **Alpine Convention** (1995) which foresees measures to reduce inter-alpine traffic on the road
- the **Paris Climate Conference** (2015) which encourages the reduction of greenhouse gases.

Given the current lack of competitiveness of the oldest railway tunnel in the Alps, environmental requirements do not exist. With the new line, it will be possible **to reduce emissions equal to those of a city with 300 thousand inhabitants, such as Verona or Strasbourg**.
The environmental commitment in construction sites is achieved by 24/7 monitoring, using internal and external control units with tests conducted on different environmental parameters (water, dust, asbestos, radon etc.), carried out under the supervision of national control bodies.

Health

In 2017, TELT submitted its first **Health Impact Assessment (HIA)** on the Chiomonte construction site, drawn up by experts from the Occupational Medicine section of the Department of Public Health and Paediatric Sciences of the University of Turin.

The over **80,000 measurements, carried** out under the supervision of the Regional Environmental Protection Agency (ARPA), by means of which 135 parameters were monitored, within a radius of 15 km from the construction site, together with the 26 control points inside the works area, did not detect any critical issue for the health of citizens and workers.

Workplace safety

TELT is committed to ensuring **high safety standards** at construction sites by involving companies and workers in all steps of the construction of the Lyon-Turin base tunnel through an ambitious programme called **Mission S** (Safety).

Legal aspects

The new Lyon-Turin railway line represents the **first case in Europe of application of the anti-mafia legislation at a transnational level** regardless of the nationality of the construction sites.
In 2018, the Prefect of the Auvergne-Rhône-Alpes Region and the Prefect of Turin signed the agreement that makes the binational structure operational for anti-mafia checks on Italian and French tenders.

The two Prefects work in parallel, sharing information, with the support of the respective police forces that carry out joint checks and inspections in the construction site areas. The checks are carried out not only on the contractors, but also on the entire subcontracting chain (also for contracts worth € 1).
The companies that have everything in order are included in a transnational White List, a sort of register of entities who can work on the construction sites.

KEY FIGURES

The Lyon-Turin railway line in figures

- 162 km of tunnels to be excavated, 57.5 km for the Mont Cenis base tunnel, the main element of the cross-border section from Saint-Jean-de-Maurienne (France) to Susa (Italy)
- the completion of the main works of the project is scheduled for 2030
- over 20% of the tunnels have already been excavated
- the works are organised into 81 calls for tender distributed over 12 operational construction sites
- the construction of this project involves almost 1,9 00 people. During the peak of the activities, there will be 4,000 directly hired workers and a same number of people employed in the related industries
- 80% of the railway line will be dedicated to freight transport, 20% to passenger transport;
- the cross-border section cost amounts to € 8.6 billion (euro 2012). Currently, 40% is financed by the European Union, 35% by Italy and 25% by France
- with the new Lyon-Turin it will be possible to:
    - Reduce the number of lorries in the Alpine region by 1 million

- reduce CO_2 emissions by 3 million tons per year
- reduce travel time for travellers:
  - Lyon-Turin 1h 47″ instead of 3h 47″
  - Milan-Paris 4h30'' instead of about 7h
  - Turin-Paris 4h instead of about 5h 30''.

KEYWORDS

#Works The Lyon-Turin line, a work in progress: we have currently excavated over 20% of the total 164 km of tunnel to be completed.

#CertifiedCost The cross-border section cost of the Lyon-Turin line amounts to € 8.6 billion, certified by a third-party, the Belgian grouping of companies Tractebel Engineering – Tuc Rail.

#Mafiafree Lyon-Turin: the first case in Europe of transnational application of the anti-mafia legislation. A single White List, checks entrusted to a binational structure coordinated by the prefects, monitoring along the entire supply chain of contracts and subcontracts, including companies from third countries.

#GlobalCompact TELT is committed to integrating 10 fundamental principles within its management mechanism and project implementation activities, which will extend to all French and Italian companies and institutions involved in the Lyon-Turin line.

#Federica French 2,400-ton TBM with the power of eight Formula 1 engines. This TBM excavated the first 9 km of the base tunnel.

 # TEN-T Network The Lyon-Turin line is the heart of the Mediterranean Corridor of the TEN-T network, the new European Metro Line, which serves 18% of the EU population, in regions that represent 17% of European GDP.

LYON-TURIN: PROGRESS REPORT

Work is underway in Italy and France for the construction of the Mont Cenis base tunnel, the central link of the Mediterranean Corridor, one of the nine axes of the TEN-T rail network under construction throughout Europe. Consisting of two tubes, each measuring 57.5 km, the new tunnel will allow freight and passenger trains to cross the Alps at the level of the plain, making transport more efficient, faster and cheaper. The work involves various underground and above ground activities.

Progress report

Work progress numbers:

- **Ten operational construction sites** in France and Italy
- **33 km, about 20% of the 162 km of tunnels planned for the work** have already been excavated, a complex system consisting of two parallel tunnels, 4 slopes and 204 safety by-passes
- **113 km of exploratory surveys** and core borings were carried out in Italy and France
- **More than 11 km of the base tunnel** were completed. after the Federica TBM completed the mechanised excavation of the first 9 km of the tunnel through which the trains will travel, at the end of April, the traditional excavation at Saint-Martin-la-Porte reached the 1.5 km mark that has been planned using this method.

Work completed:

- 10.5 km of the base tunnel between Saint-Martin-la-Porte and La Praz, 9 km of which were excavated using the Federica TBM and 1.5 km were completed in April 2022 using the traditional method
- In Saint-Julien-de-Montdenis, the cut-and-cover tunnel, an artificial tunnel that will be the French entrance to the base tunnel, was completed in the autumn 2021
- In Saint-Jean-de-Maurienne a new temporary multimodal hub (station) has been in operation since mid-June 2022. The new station (the construction of which started in 2019) was built by SNFC Réseau in agreement with TELT to support travellers and maintain the bus and train stations operational during the construction of the new lines. It will then be replaced by the new final international station
- In Villargondran, consolidation works were carried out on the embankments of the Arc river to protect the Saint-Jean-de-Maurienne basin from floods, as well as to prepare the platform where the others railway and technical structures of the Lyon-Turin cross-border section will be located. Work was completed in October 2021. At the same time, work was completed along the Arc river, at the Resses d'en Bas logistics site to adapt it to house part of the construction site that will manage the base tunnel excavation material
- In France, the slopes required to start the construction sites inside the mountain were completed: Villarodin-Bourget/Modane (4,000 m, completed in 2007), La Praz (2,480 m, completed in 2009) and Saint-Martin-la-Porte (2,400 m completed in 2010 and 1,800 m completed in 2016)

- In Italy, the Chiomonte exploratory tunnel (Susa Valley, 7,020 m) was completed.

In the ten operational construction sites the excavations and above ground works are in progress in France and Italy.

Next steps

The excavation of the cross-border section of the new line proceeds starting from the access points already completed: indeed, the 4 access slopes allow the construction equipment to reach the excavation level of the base tunnel where, at full capacity, there will be 15 excavation faces and 7 TBMs that will move forward simultaneously to complete the two tubes through which the trains will travel.

Employment

Overall, **more than 1,900 people** are currently involved in the construction of this project, including those working in the construction sites and those in services and engineering companies.
During the peak of the activities, there will be 4,000 directly hired workers and a same number of people employed in the related industries.

For the areas where the construction sites are located, tools have been set up to support local employment:

- In France, the *Démarche Grand Chantier,* an exceptional Initiative aimed at rooting projects on the territory, in particular by means of local recruitment, housing renovation, etc. It was implemented in the past for big construction sites such as the ones of the Channel Tunnel construction sites, the super nuclear reactor at Flamanville and the Seine-Nord Europe Canal.
- In Italy, the Piedmont Regional Law *Construction sites, development, territory* (4/2011), aimed at maximising the impacts through the "Pact for the Territory". In this context, TELT signed the agreement "A network for the Susa Valley" with the Piedmont region and the Piemonte Lavoro Agency to make the construction sites an engine of development for the area, in particular through training and employment measures to the benefit of the local workforce.

PROGRESS OF TENDERS

In July 2021, all contracts for the entire base tunnel in France were awarded (three lots for a total of 45 km between Saint-Jean-de-Maurienne and the Italian border).
The contracts for the Italian lot (12.5 km between Bussoleno/Susa and the French border) are expected to be awarded in 2023. The international tenders for the equipping and technological installations of the tunnel are expected to be launched in 2023.

WORK IN PROGRESS DETAILS

Workers in Italy and France: about 1,900

France

Saint-Julien-de-Maurienne: RAILWAY INTERCONNECTION
After the opening of the temporary multimodal hub (station) in June 2022, the works for the railway interconnection in Saint-Jean-de-Maurienne area continue under the responsibility of SNCF Réseau. In spring 2023, SNCF Réseau launched new contracts with a value of €215 billion for different works, close to the new railway station, including the construction of new rail platforms, noise barriers, infrastructure for the new international station, road restoration and works and studies on tracks and catenaries.

- **Agreement with SNCF Réseau**

Saint-Julien-de-Montdenis: BASE TUNNEL EXCAVATION - SAINT-JULIEN-MONTDENIS/SAINT-MARTIN-LA-PORTE
The works for the excavation of the base tunnel access, started in December 2022, continue in the 3 km section between the French entrance portal at Saint-Julien-Montdenis and towards Saint-Martin-la-Porte. The operations are taking place on the Villard-Clément platform that previously hosted the work for the cut-and-cover tunnel. Excavation in this section will be carried out using the conventional method, that is, with a hydraulic breaker and/or explosives. The construction site was set up in December 2021 and during 2022 all the necessary equipment was installed and the preliminary work for the underground excavation was carried out.
The work will be spread over 4 years, and will be followed by the completion of the site, entailing the construction of the portal part of the entrance into the mountain that completes the cut-and-cover tunnel already built and the restoration of the site to its original state.

- **Group of companies**: IMPLENIA Suisse (group head) and composed of IMPLENIA France / NGE / ITINERA / RIZZANI de ECCHER

Saint-Martin-La-Porte and La Praz: BASE TUNNEL - SAINT-MARTIN-LA-PORTE/LA PRAZ-MODANE
This construction site for the excavation of the 23 km of the base tunnel between Saint-Martin-la-Porte and Modane proceeds on two work platforms.
On the Saint-Martin-la-Porte platform, after the completion of the excavation of the first 10.5 km of the base tunnel on 28 April 2022, with the fall of the last rock diaphragm, during the autumn the concrete consolidation works of the excavated tunnel were also completed.
Then, the group of companies that won the contract for the completion of this section of the base tunnel started the activities in the La Praz platform and is carrying out the preparatory underground work.

In La Praz platform, in the Municipality of Saint André in Maurienne, the companies have started the necessary activities to prepare the site for the excavations which, in the following months, will begin with the conventional method (hydraulic breaker and/or explosive) on several fronts. In particular, the construction site installation was completed in January and the platform activities continue. Underground, five teams rotate 7 days a week, 24 h a day to complete the final gauge of the slope.
At the same time, the group ordered the three tunnel boring machines for the excavation of this section. Each **TBM** is built specifically for the excavation it is intended for. On this area the La Praz safety site, linkage branches every 333 metres between tunnels, technical rooms, niches and tunnels for operation and safety will also be built.
In total, 43.5 km of tunnels will be excavated, starting from the 17.5-km-long grid of tunnels excavated between 2003 and 2022. The territories of the municipalities of Saint-Martin-la-Porte, Saint-Michel-de-Maurienne, Orelle, Saint André, Villargondran and Saint-Julien-Mont-Denis will be affected by the works for this part of the tunnel.

- **Group of companies:** VINCI Construction Grands Projets (group head) / Dodin Campenon Bernard / VINCI Construction France TP Lyon / WeBuild

Villarodin-Bourget / Modane and Avrieux: UNDERGROUND WORKS AND VENTILATION SHAFTS OF THE BASE TUNNEL

The construction of the ventilation shafts for the base tunnel is under way. These are four parallel vertical tunnels to be built at an altitude of 1,300 metres. They are very important because they must reach the underground station of Modane (at the foot of the Villarodin/Bourget-Modane slope), 500 metres below, where they will contribute to ventilation and safety.
The four parallel shafts with a diameter of 5.2 metres are excavated using Raise Boring Machines, a technology developed in the mining industry specifically for the mechanised excavation of vertical shafts of small diameter.

Pilot holes are excavated into the underground caverns at a depth of 500 metres. Bars are then inserted into the holes, at the ends of the bars the reamers (the heads of the vertical cutters) are mounted, which then go back up and dig the shaft vertically. The excavated material, which falls by gravity, is taken out through the existing slope. The four pilot holes and the fist shaft were completed in April 2023, while the second shaft is under way. The safety site tunnels and several technical caverns, measuring up to 22 metres in height and 23 metres in width, are also being built underground. They will be used to assemble the TBMs that will then excavate towards Italy. At the end of 2022, the group of companies ordered the two tunnel boring machines planned for the excavation of this section.

- **Group of companies**: VINCI Construction Grands Projets, Dodin Campenon Bernard, VINCI Construction France, Webuild and Bergteamet.

Modane: BYPASS
The Modane bypass will lead around the Modane and Fourneaux town centres and be used to supply the Villarodin Bourget/Modane base tunnel construction site and connect to the A43 motorway, thereby also facilitating the removal of excavated material.
Work on the first section was completed in April 2022. Following this, work will begin on the completion of the bypass (with a 198-m-long road tunnel) that will connect to the A43 motorway.

Group of companies: Spie Batignolles – Cogeis

Modane: BRIDGE OVER THE SAINT ANTOINE TORRENT
The crossing of the Saint Antoine torrent by the Modane bypass will be realised by means of a new bridge to replace the existing one. With a span of 27 metres and a width of about 17 metres, the new structure will have two traffic lanes and a left-turn lane, as well as a cycle lane. During the demolition and reconstruction work, a temporary two-lane bridge was put in place to ensure that the connection between the two banks of the river is maintained.
Adaptation and safety work is also planned on the bed of the Saint-Antoine torrent at the crossing of the RD1006 road and at the confluence with the Arc river.

- **Group of companies:** Eiffage Génie Civil / Forezienne / Soletanche

Italy

Chiomonte: NICHES AND BASE TUNNEL CONSTRUCTION SITE ENTRANCE

In Chiomonte there is the largest Italian construction site for the Lyon-Turin railway line; since 2012, it has been a site of strategic national interest and is the Italian access route the base tunnel.
The excavation of the niches to facilitate the passage of construction vehicles in the Maddalena 1 tunnel, completed in 2017, is under way. The contract provides for the construction of 22 niches (each 3 m deep and 30 to 40 m long). Excavated every 300-400 m along 7 km, they will transform the tunnel, which was created for exploratory purposes, into an access point for the construction vehicles of the base tunnel. When fully operational, it will be used as a service, safety and ventilation tunnel for the new tunnel.

The niches are excavated using the traditional method with the use of explosives: each 'blast' (each detonation performed in the tunnel) is planned and managed with professionals called 'shot firers' and in total safety. The excavated material is ground on site and reused to create the road surface in the tunnel. At the same time, the excavation of the niches that will reach the 7 km depth of the tunnel is under way.

- **Group of companies:** Webuild, Vinci Constructions France TP, CSC Entreprise de Constructions, Dodin Campenon Bernard.

In Chiomonte, the construction site for the new junction of the A32 motorway, which will allow the transit of construction vehicles without interfering with the local road traffic is also

operational. The construction of the new junction is managed by SITAF, a motorway company, on the basis of an agreement with TELT.

- **Agreement with SITAF** (Società Italiana per il Traforo Autostradale del Frejus SpA)

San Didero: RELOCATION OF THE SUSA CAR AND TRUCK TERMINAL

The new car and truck terminal between San Didero and Bruzolo is part of the final project for the Lyon-Turin railway line and will replace the current one today in Susa, where the facilities for the new international station are planned. The construction site is the second site opened in Italy for the Lyon-Turin railway line. The relocation is managed by Sitaf on the basis of an agreement with TELT.

The car and truck terminal will be built on an area of **approximately 68,000 square metres**, between the A32 motorway and the "Moncenisio" state road 25. The project has been **approved by all the competent bodies** and has been developed from a **green perspective** in terms of materials, processes and technologies. Moreover, it also minimises the use of forest areas in the territory: the interference of the new work constitutes 0.5% of the woods in the municipalities of San Didero and Bruzolo and 0.08% of the total wooded area in the valley bottom, around the Dora Riparia river. When work for the terminal is completed, a restoration is planned of all the areas not concerned by the new infrastructure.

- **Agreement with SITAF** (Società Italiana per il Traforo Autostradale del Frejus SpA)

Salbertrand: REUSE SITE

The abandoned material removal activities continue to prepare the area for **the sorting and reuse of the excavated materials** from the base tunnel construction site, in Italy. Between 2021 and 2022 the first phase of removal of the piles of materials abandoned over the years by various subjects was completed and the cleaning of another portion of the site is under way. TELT is carrying out this operation on the instructions of the CIPESS "against" those responsible for dumping the materials who never arranged for their removal. The environmental monitoring plan is operational in the area to control the different environmental components with a special focus on soil. All the results about the investigation are shared with Arpa Piemonte and reported to the relevant territorial stakeholders.