

GHG REPORT 2022

ENERGIES IN MOTION



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The FS Group's path
to a sustainable future

INTRODUCTION. A CHANGE OF COURSE

SETTING DECARBONISATION OF TRANSPORT AS A GOAL

The GHG¹ Report of the FS Italiane Group delved into the management of energy aspects and the correlated emissions of climate-changing gases during the year 2022.

The overview stems from the Carbon Disclosure Project Climate Change Questionnaire, the tool adopted by the FS Group for the purpose of monitoring and assessing its commitment to promoting decarbonisation and mitigating the impact of its activity on climate change.

The report illustrates the approach, strategies and the level of performance of the Group and also projects launched by it in 2022, implementing its initiatives and undertaking a journey towards carbon neutrality and a more human-scale, environment-friendly system of transport facilities.

In order to facilitate comprehension on the part of the reader we have compiled a small glossary of terms that are not frequently used. In the text they are **highlighted in this way**.

Climate change poses important challenges that are quite concerning and which we care about. We would like it to be clearly understood by everyone because only a common commitment will ensure concrete results are achieved.



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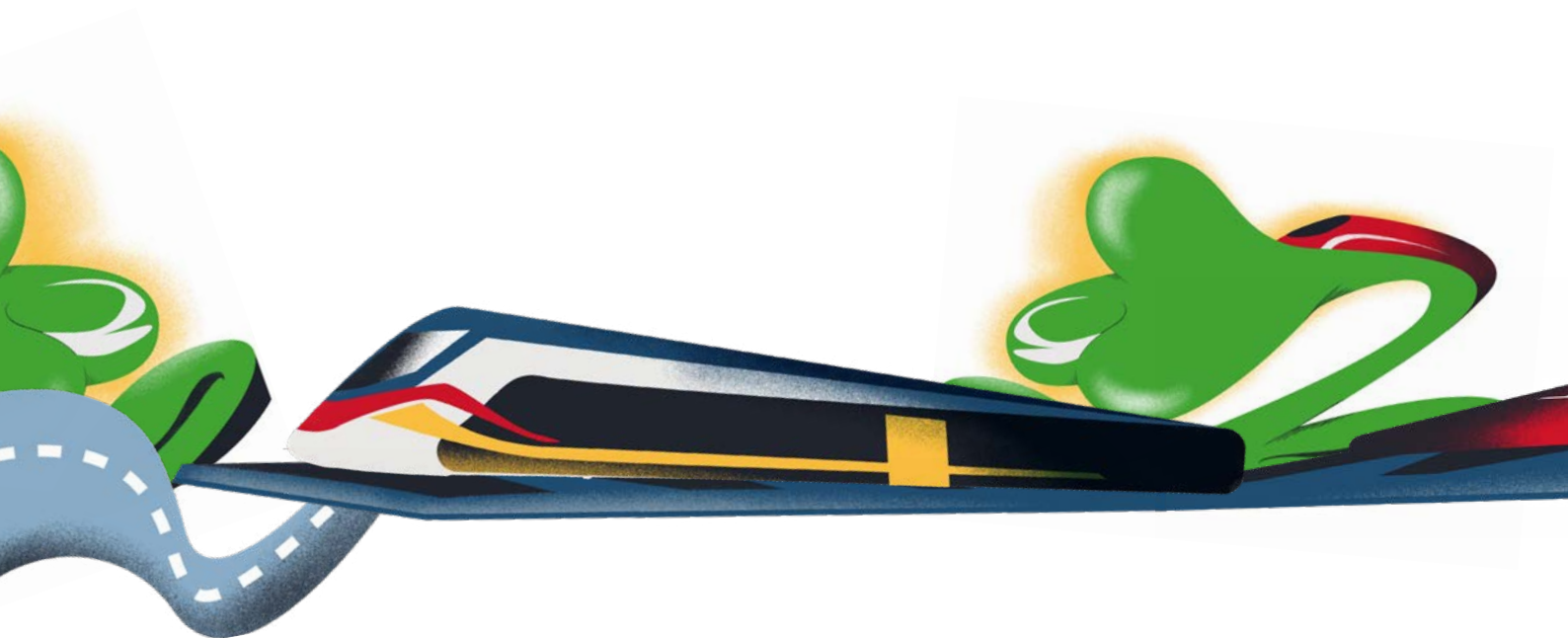
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1// METHODOLOGICAL APPROACH

THE STARTING POINT

The analysis of the impact which the FS Italiane Group’s activity has on the climate follows internationally-recognised methodologies and standards, such as the **Global Reporting Initiative (GRI)**. More specifically, the reporting of emissions is conducted in accordance with the guidelines offered by **GHG Protocol**. This organisation, resulting from a partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), provides for the development of an inventory of greenhouse gases which is updated annually.

The organisational perimeter of reporting, identified as being in line with the full consolidation method (cf. Annual Financial Report), includes the Parent Company and the consolidated companies controlled directly and indirectly. Companies excluded are those engaged in financial and certification/inspection activities in the rail transport sector (for which the environmental impact generated is not of a material nature) and companies governed indirectly by the Parent Company, through its subsidiaries, with less than one hundred employees.

REFERENCE PERIMETER OF ENVIRONMENTAL DATA

| | |
|------------------------------|--|
| Infrastructure Business Unit | Rete Ferroviaria Italiana SpA, Terminali Italia Srl, Blufferies Srl, Blu Jet Srl, Grandi Stazioni Rail SpA, Anas SpA, Italferr SpA, Ferrovie del Sud Est and Servizi Automobilistici Srl for the infrastructures sector |
| Passenger Business Unit | Trenitalia SpA, Hellenic Train SA, Netinera Group, Trenitalia c2c Limited, Trenitalia France SAS, Ferrovie del Sud Est and Servizi Automobilistici Srl for the passenger sector, Busitalia - Sita Nord Srl, Busitalia Campania SpA, Busitalia Veneto SpA, Qbuzz BV |
| Logistics Business Unit | Mercitalia Logistics SpA, Mercitalia Rail Srl, Mercitalia Shunting & Terminal Srl, TX Logistik AG |
| Urban Business Unit | FS Sistemi Urbani Srl |
| Other services | Ferrovie dello Stato Italiane SpA, Ferservizi SpA |

With particular reference to the greenhouse gas inventory, the **direct Scope 1 emissions, indirect Scope 2 emissions and external Scope 3 emissions** are measured according to the international guidelines of the

GHG Protocol. The **greenhouse gases covered by the report** are CO₂ (carbon dioxide), CH₄ (methane), and N₂O (nitrogen oxide).

DIRECT AND INDIRECT EMISSIONS

The GHG Protocol Corporate Accounting and Reporting Standard guide (2004), also briefly referred to as the Corporate Standard, provides a standardised methodology for the quantification of greenhouse gas emissions associated with the Corporate Carbon Footprint (CCF), classifying them as Scope 1, Scope 2 and Scope 3 emissions.

The Scope concept refers to all the processes and resources necessary to complete a project.

- Scope 1: direct emissions generated by the company, the source of which is owned or controlled by the company;
- Scope 2: indirect emissions generated by the energy purchased and consumed by the company (for example, electricity). These are emissions the production of which occurs physically outside the company premises;
- Scope 3: indirect emissions generated by activities outside the company premises, occurring in the value chain of the organisation. These are separated into 15 categories: 1. Purchased goods and services 2. Capital goods 3. Fuel- and energy-related activities (not included in scope 1 or scope 2) 4. Upstream transportation and distribution 5. Waste generated in operations 6. Business travel 7. Employee commuting 8. Upstream leased assets 9. Downstream transportation and distribution 10. Processing of sold products 11. Use of sold products 12. End-of-life treatment of sold products 13. Downstream leased assets 14. Franchises 15. Investments

With regard to **Scope 1** emissions, those linked to losses of HFC (refrigerant gases for air conditioning systems) and SF 6 (a gas used in various industrial applications, and in particular in electric switches and disconnectors), and also those resulting from land consumption for the

creation of new infrastructures are currently excluded from the measurement. In fact, it has been determined that they have an insignificant impact with respect to the overall total of emissions linked to energy consumption and their effect corresponds to less than 1% of overall emissions.



Scope 2 emissions are quantified using both the **location-based** and also the **market-based** method. Application of the market-based method ensures adequate consideration of the fact that, currently, within the Italian railway infrastructure managed by the Italian Railway Network (RFI), with regard to the electricity supply system the network manager does not have the right to purchase **Guarantees of Origin**. Consequently, GHG emissions relating to electric railway traction in the infrastructure managed by RFI are estimated by applying the national production coefficient.

In 2022 the Parent Company updated and clearly defined the analysis of **Scope 3** emissions of the Group in accordance with the GHG Protocol guidelines. It improved and increased the efficiency of the reporting of impacts and performed an analysis of the relevance of each category of emissions.

Scope 3 - Relevant categories of emissions (equivalent to approximately 99% of the total)

- emissions relating to goods and services acquired and capitalised in reference to the supply chain (categories 1 and 2);
- emissions linked to upstream processes of energy supplies (category 3);
- emissions linked to third-party railway companies circulating on the RFI network (category 11).

The inventory of emissions of the FS Group has also been aligned with the reference framework of the ISO 14064-1 standard, according to the categories required by the standard.

SOURCES OF THE GHG EMISSIONS INVENTORY

The main source of data (relating to energy consumption, materials used, waste produced, etc.) is the IT platform managed by FS Italiane for the **collection of information and KPIs within the sphere of sustainability reporting**. It involves all of the companies of the FS Group included in the reference perimeter, at all necessary organisational levels.

The conversion factors used to calculate emissions refer to year 'n-2' with respect to reporting year 'n', in order to make use of the most up-to-date data available in the literature during the reporting phase. The table shows the main sources of emission factors for each area.

For conversion to a CO₂ equivalent the values of the GWP (Global Warming Potential) illustrated in the AR5 (Fifth Assessment Report) of the IPCC (Intergovernmental Panel on Climate Change) were taken into consideration.

| AREA | DESCRIPTION | SOURCES OF THE ENERGY CONVERSION AND EMISSION FACTORS |
|---------|---|---|
| Scope 1 | Emissions generated directly by the activities of the organisation | - IPCC Guidelines for National Greenhouse Gas Inventories (2006) - Energy Statistics Manual (IEA, 2005) - Italian Annual GHG inventory - NIR 1990-2020 (ISPRA, 2022) - DEFRA UK - Conversion Factors 2020-2019-2018 - UNI 16258 (2013) |
| Scope 2 | Emissions generated indirectly by the organisation's activities | - IPCC Guidelines for National Greenhouse Gas Inventories (2006) - Fiche 330 (UIC, 2008) - DEFRA UK - Conversion Factors 2020-2019-2018 a) Location-based: Emission factors for the production and consumption of electricity (ISPRA, 2022) b) Market-based: European Residual Mixes (AIB, 2018-2019- 2020) |
| Scope 3 | Emissions generated indirectly by stakeholders related to the organisation's activities | - Emission factors used for the reporting of Scope 1 and 2 emissions - UNI 16258 (2013) MIMS: Railway works: guidelines for evaluating investments according to the sustainability criterion, 2021. - JEC Well-To-Wheels report v5 (2020) - Eurostat database: Air emissions accounts by NACE - in CO ₂ equivalent, Annual Enterprise Statistics for special aggregates of activities - by NACE (2022) - Italian Annual GHG inventory - NIR 1990-2020 (ISPRA, 2022) - DEFRA UK - Conversion factors 2020-2019-2018, UNI 16258 (2013) |

2// GOVERNANCE

PLANNING THE ROUTE FORWARD

The FS Italiane Group operates in the logistics and transport sectors, which present high environmental and climate impacts. **Integrating environmental sustainability in business strategies involves setting a clear direction** with regard to an ecological transition and moving towards sustainable mobility and reduced climate-changing emissions.

The Sustainability Governance Model adopted identifies the management processes of this path, determining key

instruments and roles within the business management of the FS Group.

Governance for the management of aspects relating to climate-changing emissions concerns all sections of top management, for which specific areas of intervention and responsibility are defined. To support the managerial staff, bodies having ad-hoc advisory and coordination functions have also been created to cope with issues relating to climate change.

ANNUAL CARBON EFFICIENCY TARGETS

Sustainability is one of the fundamental principles upon which the Group's strategies are based. In order to promote its integration within the business, objectives for the entire corporate workforce are established on an annual basis. A carbon efficiency target was determined in 2022 which establishes a relation between the economic value that is generated* with the units of CO₂ produced (Scope 1+Scope 2 location based emissions). The target envisaged for 2022 is a 10% increase of the indicator with respect to the previous year. This goal has been achieved.

| CARBON INTENSITY OF THE FS GROUP | UNIT OF MEASUREMENT | 2022 | 2021 | %Δ 22/21 |
|--|---------------------|------|------|----------|
| Carbon efficiency (Economic value generated per unit of CO ₂) - location based | €/tCO ₂ | 7117 | 6907 | 16.7% |

*The economic value generated represents the measurable economic wealth produced during the year by the Group.



ROLES AND RESPONSIBILITIES IN THE MANAGEMENT OF CLIMATE ASPECTS

Board of Directors (BoD) of the FS Group

The BoD is responsible for the Sustainability Governance Model and determines the strategic direction of the FS Group, which is increasingly focused on combating climate change. Amongst other things, the BoD is responsible for the Management by Objectives (MBO) policy: a short-term incentive system of the FS Group executives in which, for several years, a part of the variable component of remuneration is linked to achieving a goal relating to the reduction of climate-changing emissions.

Control, Risk and Sustainability Committee (CRSC)

This body is composed of directors who are members of the Board of Directors, the majority of whom are independent. The committee deals with various aspects of sustainability related to the FS Group, such as forms of environmental impact and the relative reporting of the phenomenon. Its role is to support the assessments and decisions of the BoD relating to the internal control and risk management system, the approval of regular reports and also sustainability profiles linked to the exercise of the FS Group's activities.

Chief Executive Officer (CEO)

The CEO has a key role in defining the strategy, providing the principal guidelines to promote a sustainable business model, and verifies the effectiveness of the Sustainability Governance Model, analysing corrective action and opportunities for improvement at the FS Group level.

Chief Security & Risk Officer

This officer provides for the planning, implementation and governance of the integrated Enterprise Risk Management model and the integrated process for the monitoring of all corporate risks.

Chief Strategy & Sustainability Officer (SSA*)

This official coordinates and supervises the Group's strategic trajectory in order to improve its sustainability performance, defines the instruments and methodologies to be adopted for monitoring and verifies the results that are achieved.

(*) Since June 2023, the functions referred to above have been assumed by the Chief Corporate Affairs Officer.

Sustainability Committee

An advisory body established to assist the CEO, who presides over it. The SC ensures the integration of a sustainable development model within the strategies of the FS Group. The committee members are the CEO, 7 Chief Officers of FS and the CEOs of the 4 principal companies within the sectors of the FS Group.

Sustainability Manager

This leading figure ensures that policies and strategic guidelines are clearly defined to improve the Group's Sustainability performance. The Sustainability Manager is the head of the Technical Secretariat of the Sustainability Committee.



Shopping κ   

3//

MANAGEMENT OF CLIMATE RELATED RISKS AND OPPORTUNITIES

MOVING THROUGH AN EVER-CHANGING SCENARIO

The transport sector can impact climate change, however climate change itself may have an impact on in this sector in various ways. The occurrence of increasingly extreme and frequent meteorological and hydrogeological phenomena can impact the reliability and safety of transport. Flooding, torrential rain, strong gusts of wind and heat waves may cause significant damage within a particular area, with consequent repercussions also on infrastructure and mobility systems.

To reduce the impact of these phenomena, FS Italiane has introduced and now adopts instruments to counter their effect within its **climate risk management** scheme.

RISK MANAGEMENT

The FS Group intends to ensure increasingly climate-resilient infrastructures and mobility services by means of:

- an assessment of aspects of the vulnerability of assets exposed to climate hazards;
- an assessment of the impacts of climate risks on business sectors in the medium and long term;
- the definition of a response plan through adaptation intervention, adopting a Grey, Soft and Green, triple infrastructure framework.

To this end the **FS Group Risk Management** sector has developed methodologies that aim to define a homogeneous and synergistic approach among the various businesses of the Group for the assessment of vulnerability and climate risks. The climate and transition dynamics foreseen are monitored, for example, through the analyses of a scenario based on Representative Concentration Pathways (RCP) defined by the Intergovernmental Panel on Climate Change (IPCC), and also through the participation of Companies in sectoral working groups promoted by the UIC and the PIARC (World Road Association).

The FS Group has defined an **intervention programme** in response to the physical risks deriving from climate change, the aim of which is to improve the performance and reliability of services, the lowering of emerging costs induced by the climate and the reinforcement of traffic safety.

The objective of the programme is to manage the uncertainty of the impact of these changes in order to identify and plan the most appropriate forms of physical intervention on the infrastructure network according to a proactive rationale and perspective.



TYPES OF MAJOR RISKS

The risks associated with climate change could have significant consequences for the Group's assets and business and, on the basis of what was defined in the Communication of European Commission of June 2019, are classified as:

- Transition risks. In particular, these comprise the following uncertainties and hazards:
 - risks linked to policies and changes in the regulatory framework (imposition of energy efficiency requirements, carbon pricing, carbon tax, etc.);
 - legal risks (the risk of disputes arising in the event of failure to adopt measures to mitigate negative effects on the climate, etc.);
 - market risks (linked to changes in the behaviour of consumers, who may decide that services having a lower impact on the climate are more appealing, etc.);
 - technological risks (linked to the failure to adopt new technologies with a lower impact on the climate, etc.);
 - reputational risks (linked to the difficulty to attract and retain customers, employees, partners, etc.);
 - risks relating to the company profile with respect to investors, if the company were to be perceived as having assumed an inadequate approach with respect to emerging climate challenges;
- Physical risks, which, in particular, comprise:
 - acute physical hazards, linked to the occurrence of extreme meteorological phenomena such as hurricanes, floods, droughts, the increasing frequency and intensity of which are related to the phenomenon of global warming. Such events may result in an interruption of activities and significant damage to infrastructures;
 - chronic physical risks, which arise from longer-term climate changes (e.g., a rise in temperature, scarcity of water resources, sea level rise, loss of the stability

of land and soils, etc.) with significant consequences on railway and road infrastructures.

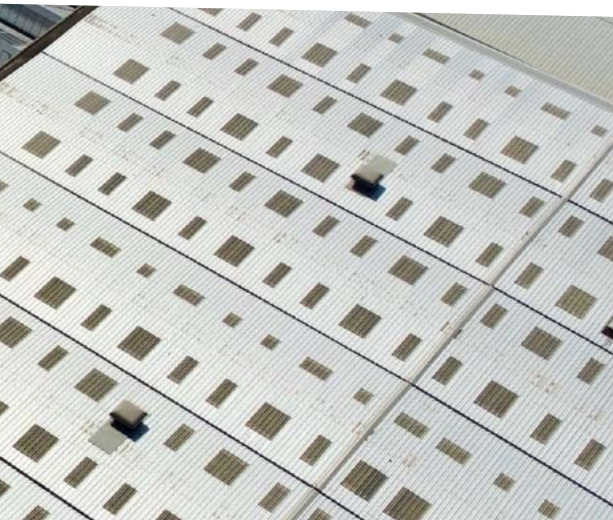
Furthermore, the Group is actively committed to its own **transition course towards a low-carbon economy** through the definition of long-term objectives, which, amongst other things, are aimed at reducing CO₂ emissions, and the promotion of a modal shift in favour of collective mobility and rail transport for passengers and goods.

As regards the supervision and control of **physical risks** resulting from climate change, for example, the Companies are equipped with technologically advanced and environmentally sustainable instruments **for the monitoring and control** of the state of the infrastructures and plants involved. In recent years inter-company work groups have also been activated to ensure the necessary coordination of instruments used for assessment and response to physical risks.

However, the fight against climate change represents a challenge which may also lead to the development of particular opportunities, such as:

- the reduction of dependency on critical sources with regard to energy;
- competing through the development of new efficient technologies characterised by a reduction in greenhouse gas emissions;
- an improvement of the firm's reputation and the perception of stakeholders

Cultivating these opportunities in a profitable manner is of considerable interest for the Group, not only by way of nurturing commitments undertaken relating to the carbon neutrality objective but also in order to carry on as a valid actor in the transport sector and as a protagonist with regard to low environmental impact.



THE RAILWAY SYSTEM AND PHOTOVOLTAICS: AN OPPORTUNITY

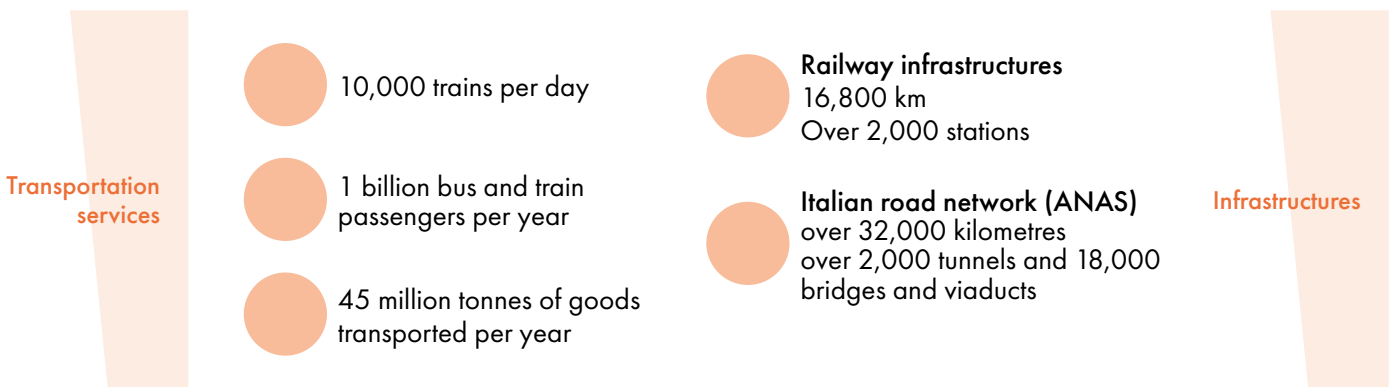
Decree Law 17 of 2022 defined the sites and facilities, available to companies forming part of the FS Group, as areas suitable for the installation of renewable energy systems. This recognition facilitates the construction of the facilities, reducing by a third the terms of the authorisation procedures. The opportunity was seized by FS Italiane, which has started an important project aimed at constructing photovoltaic systems to produce electricity and which is being developed within the Industrial Plan.

4// A STRATEGY ALIGNED WITH CLIMATE OBJECTIVES

THE TARGET OF CLIMATE NEUTRALITY

With more than 82 thousand employees, Ferrovie dello Stato Italiane is the leader in rail passenger and freight transport in Italy and an important European player in the sector.

Gruppo FS Italiane



Transport management within such a highly-structured reality requires a multi-level strategy. The **Industrial Plan for the period 2022-2031** adopted by the FS Group, outlines solutions from the design phase to the construction phase of various works. It is divided

into **four business hubs** to cover every sector in which the FS Group operates and in which it can make a difference as it proceeds along the path leading towards a **new approach to mobility**. Hence, the name of this endeavour: 'A New Era'.



INFRASTRUCTURE BUSINESS UNIT
dedicated to projects for the economic and social development of the territory



PASSENGER BUSINESS UNIT
where integrated sustainable mobility solutions are created



LOGISTICS BUSINESS UNIT
with objectives relating to the digitisation of the goods transport chain and solutions to make it more competitive



URBAN BUSINESS UNIT
to regenerate assets no longer functional to the railway service in a sustainable way, whereby they will also become available to the community

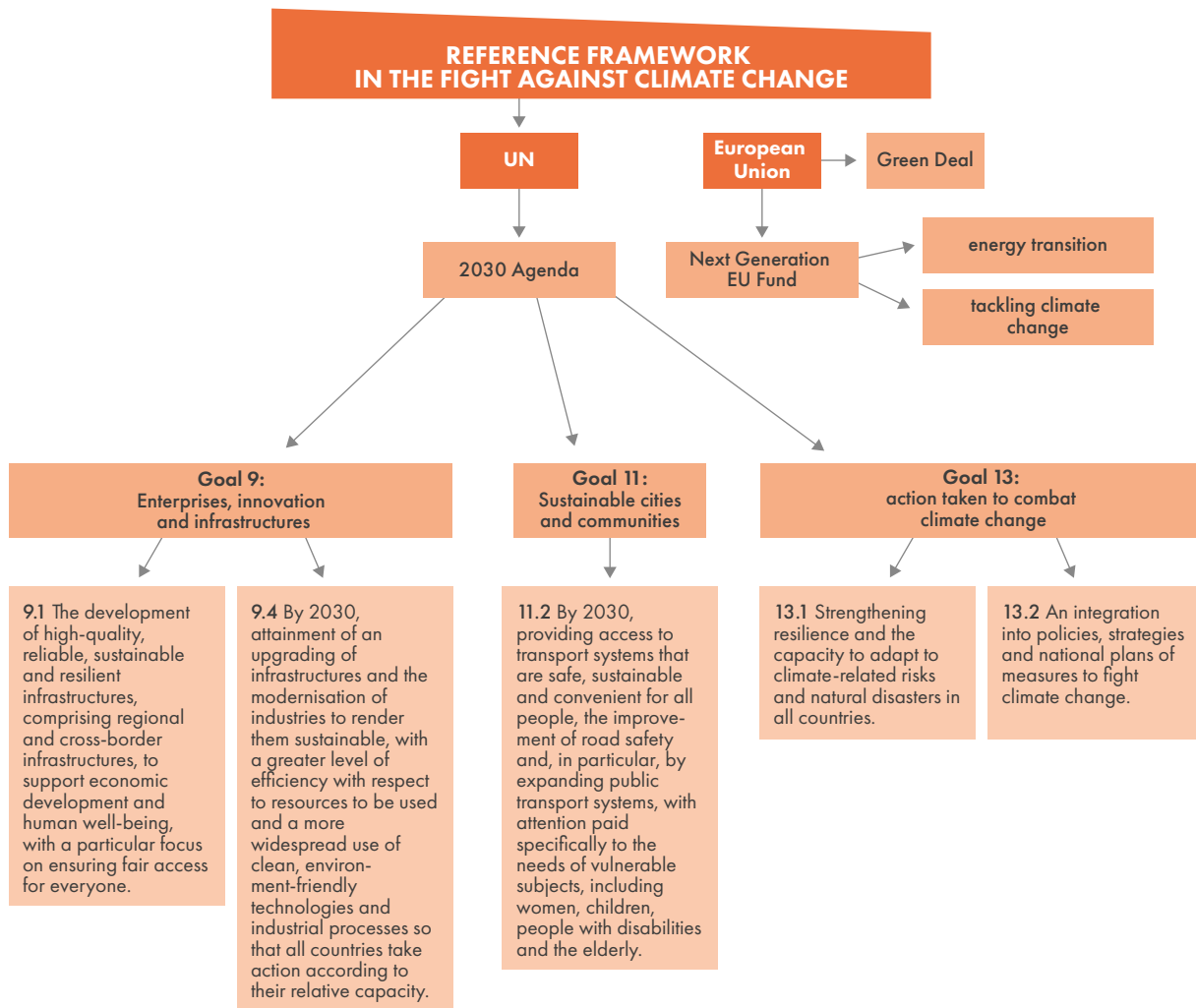
FOLLOWING THE ROUTE ESTABLISHED BY THE UN AND THE EU

Through its New Era commitment the FS Group undertakes to effectively participate in the realisation of the Objectives of Sustainable Development provided for in the 2030 Agenda of the United Nations, with investments of **190 billion Euro** to fund:

- the creation of national railway and road infrastructures;
- the recovery and subsequent development of pre-Covid traffic volumes;
- a renewed focus on the quality of the services provided;
- the promotion of increasingly sustainable mobility and logistics services;

- the development of systems aimed at the self-generation of energy from renewable sources on a large scale;
- the creation of synergies between the various transport systems from an intermodal perspective.

In terms of the commitment to combat climate-changing emissions, the proposals of the 2022-2031 Industrial Plan focus on possible responses to the objectives listed in Goals 9, 11 and 13 of the Agenda 2030 of the United Nations.



The direction in which the FS Group is now heading reflects and adheres to the guidelines determined by the European Union and with the Industrial Plan the Group has determined its objectives: to promote a multimodal and more sustainable form of collective transport, also in urban areas; double the share of rail freight transport; contribute to the ecological transition, not only by rendering more attractive the use of trains, the most ecological means of transport par excellence, but also through the self-

production of at least 40% of energy requirements from renewable energy systems.

On the basis of this orientation, FS Italiane has referred to and has transposed the strategy outlined in its plan, whereby A New Era is envisaged, into a **Climate Transition Plan**, which presents projects and activities aimed at achieving **climate neutrality by 2040** and, that is, ten years earlier than the final date set by the Green Deal.

PATHS TO ACHIEVE CARBON NEUTRALITY

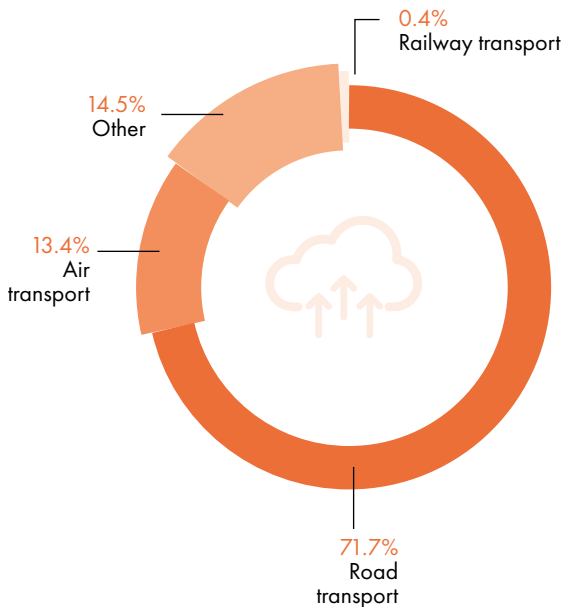
The public transport sector is in fact quite a long way behind other areas on the path towards decarbonisation. For the FS Group, a sense of responsibility towards the environment is reflected in its tangible commitment underlying the Transition Plan aimed at ensuring sustainable mobility and **carbon neutrality**.

At a European level, general transport is responsible for approximately **26% of greenhouse gas emissions (GHG)**, a percentage with respect to which direct emissions from the railway sector have a minimal impact, accounting for only **0.4% of the transportation sector**.

CO₂ emissions relating to transport energy consumption

The transport sector emits approximately **26%** Of the emissions linked to energy consumption (including international air transport and navigation)

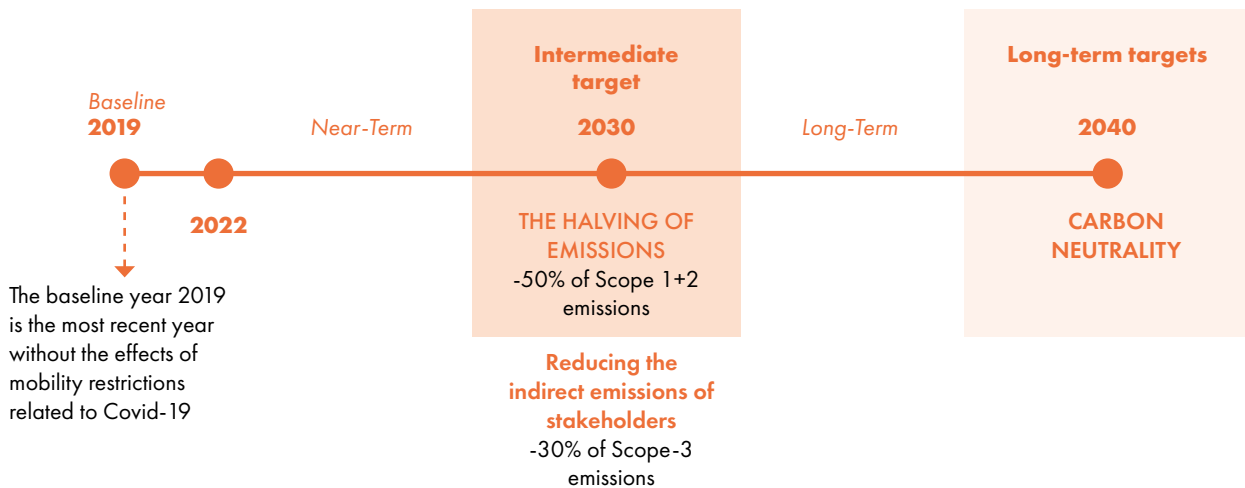
Emissions related to the transport sector (CER Fact Sheet | Railway to a green future, 2022)



CARBON NEUTRALITY

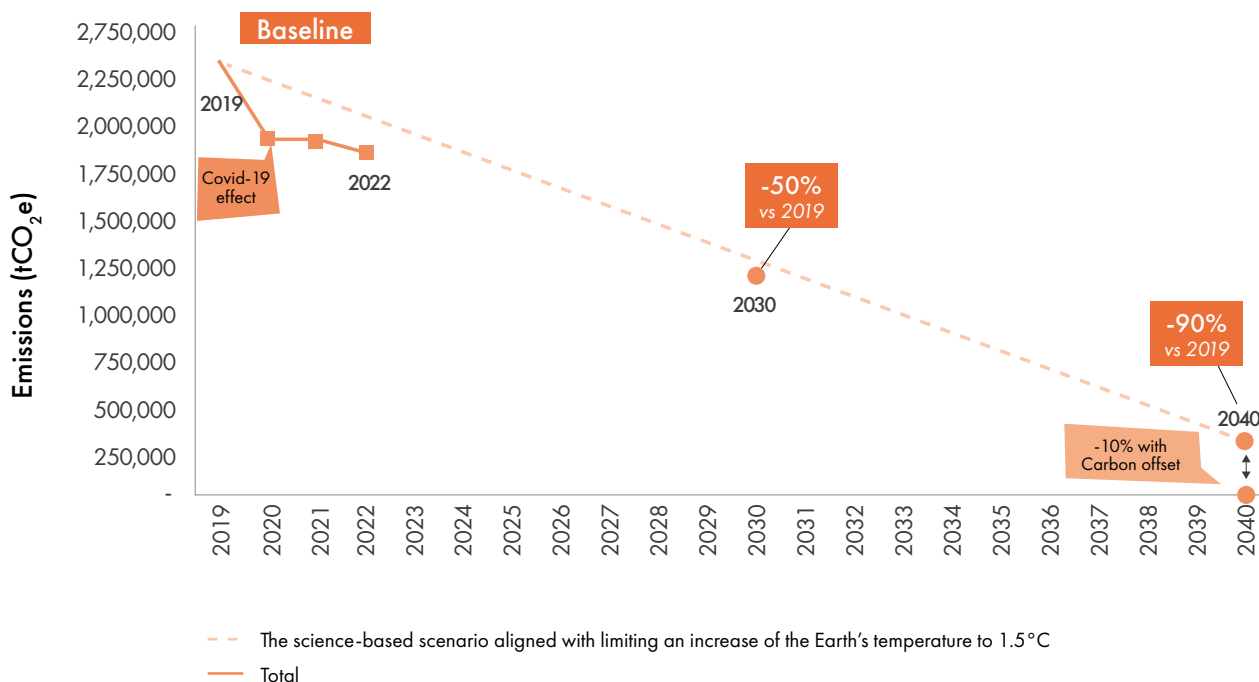
The achievement of a balance between carbon emissions and their absorption. This means that every tonne of CO₂ produced by human activities must be counterbalanced by the absorption of equal quantities of carbon. (European Parliament, Carbon neutrality: what it is and how to achieve it | Current affairs | European Parliament (europa.eu))

The stages of the path towards carbon neutrality are established with the aim of halving both direct and indirect emissions - Scope 1 and Scope 2 by 2030, and reducing by 30% those in the value chain (produced by suppliers, customers, etc.) of the FS Group, i.e., Scope 3.



The path towards decarbonisation

The Scope 1 + Scope 2 decarbonisation roadmap (location-based)



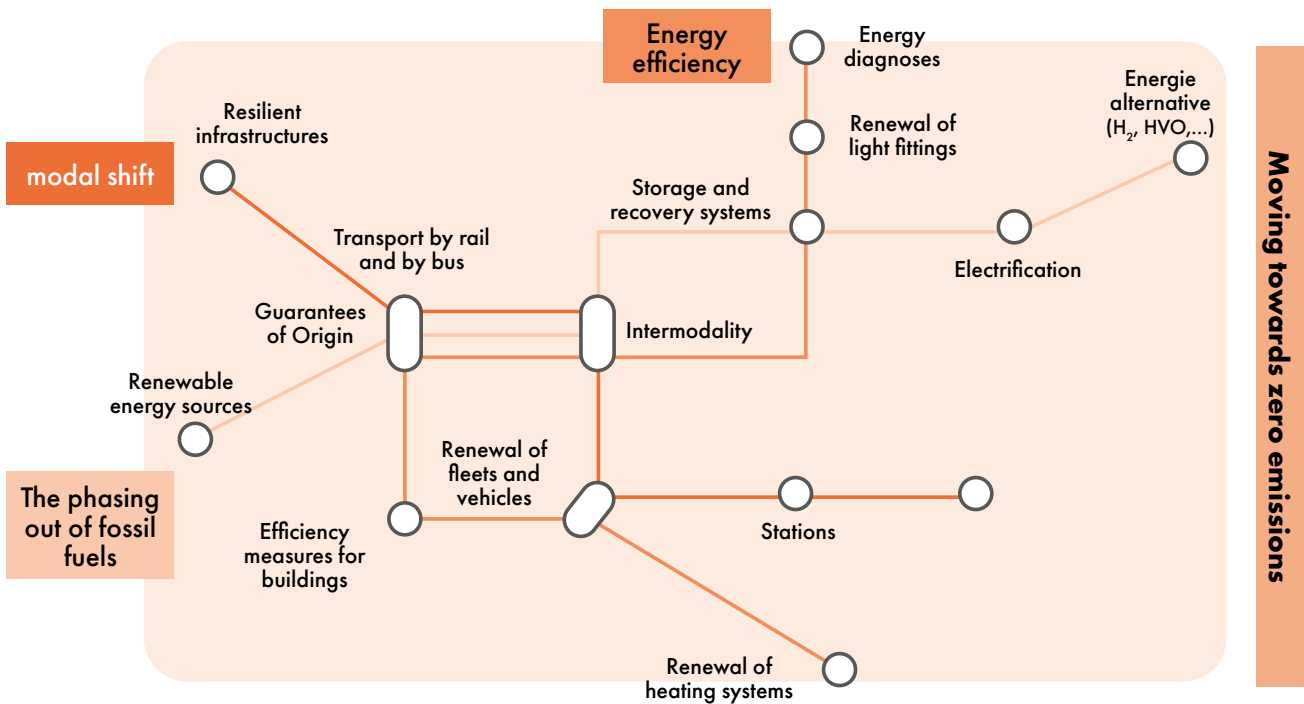
The commitment of the FS Group within the sphere of climate-changing emissions is reflected in a series of actions defined through the 2022-2031 Industrial Plan and in its participation in initiatives at the international level, such as the **Science Based Targets Initiative (SBTI)**, an undertaking promoted by the **Carbon Disclosure Project**, UN Global Compact, World Resources Institute and the World Wide Fund for Nature, which encourages the private sector to reduce climate-altering emissions to contain global warming. **In the summer of 2022 FS Italiane signed a letter**

of commitment to establish the certification of its decarbonisation targets: **net zero** by 2040, and a reduction of **50% of Scope 1+2 emissions** and **30% of Scope 3 emissions by 2030**.

To proceed towards the goal that has been set and contribute to the reduction of emissions in the transport sector FS Italiane is following three lines of action: **a modal shift**, energy efficiency and the divestment of fossil fuels, stimulating an intense drive towards electrification and renewable energy.



2. FS Group strategies towards zero-emission transport



MODAL SHIFT

A twofold objective:

- moving more people, using trains and vehicles that exploit renewable energy, **and shared/collective, 'soft' mobility**;
- The aim is to ensure an increasing volume of goods is transported by rail, reducing the use of vans and lorries.

This can be realised thanks to an expansion of the railway network, rendering it more finely-meshed and widespread, and thanks also to a plan to introduce **1,000**

kilometres of new **high speed** routes within the ten-year period established by the Industrial Plan. All projects aimed at transforming stations into **intermodal nodes** are comprised in the 'intermodal concept'. Stations would ideally become locations where a broad variety of options and services are available, and, apart from trains, these would include taxis, cars and bike sharing, scooters, and easy transportation services for travellers, local citizens and tourists. The 'nodes' would also be envisaged as a major attraction for the development of a local territory.

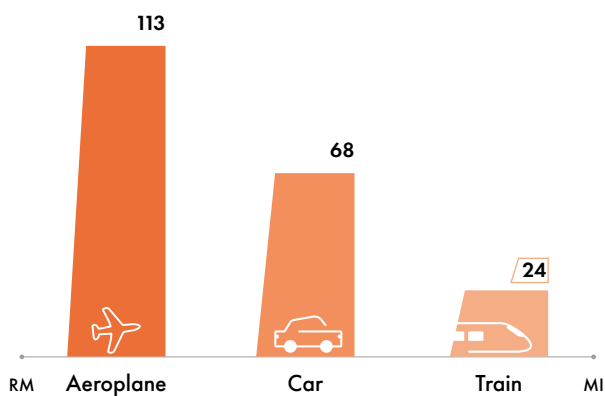
MODAL SHIFT

The 'shifting' of travel modes, emphasizing the need to use more sustainable forms. The plan is comprised among EU objectives relating to climate change because introducing to the greatest extent possible low-impact solutions within the transport sector, for example with respect to trains and vehicles that use renewable energy, will result in a positive impact on the quantity of climate-changing emissions.





Average CO₂ emissions per passenger (kg)
Roma Termini – Milano Centrale route



ENERGY EFFICIENCY

Supporting and increasing the energy efficiency of vehicles and buildings means ‘consuming’ in a better way, using less energy and increasing the general performance of systems.

The reduction in consumption would occur through **the use of more efficient vehicles**, such as new-generation models - also on regional routes - which are more sustainable and comfortable thanks also to engines with natural ventilation, the use of light alloys, LED lighting, and CO₂ sensors for optimal air conditioning. The year 2022 saw the introduction of **81 new means of railway transport**, including regional and long-distance passenger trains, more than **100 motor vehicles for Local Public Transport services** and over **150 freight wagons and locomotives** for the transportation of goods.

The 2022-2031 Industrial Plan has established the objective of renewing 80% of the national Trenitalia fleet for regional transport within the next 5 years.

The new ‘Pop and Rock’ trains, adopted for regional transport services, are equipped with intelligent systems for the management of air-conditioning energy and an intelligent parking function which minimizes energy consumption. The main advantages of the new fleets are:

- a 30% reduction in energy consumption compared to the previous generation;
- recyclability reaching a level of 96%;
- more spaces for bicycles and charging points for e-bikes;
- funding through **Green Bonds**.

In the same year the old thermal generators were replaced with **HVAC heat pump** systems used to heat Milan Central Railway Station, with an estimated annual saving of 1,260 tonnes of CO₂.

Action taken for the energy upgrading of stations, roads and also railway and motorway tunnels will occur in a manner adherent to this perspective. In order to increase energy efficiency, **energy diagnoses** are found to be particularly effective. These analytical tools produce auditing reports which provide estimates and opportunities for the improvement of energy efficiency, and also result in hypotheses relating to improvement schemes and interventions that may be carried out. Thanks to the diagnostic overviews it has been possible to introduce radiant-belt heating systems, LED lighting and high-efficiency compressors.



FOSSIL FUEL PHASE-OUT

The electrification intervention projects planned for the next ten years relating to **over 2,000 kilometres of railway lines** will allow for a reduction in the circulation of diesel-powered vehicles.

Moreover, Trenitalia is also integrating its regional fleet with the so-called 'Blues Trains', resulting from a multi-annual collaboration between the FS Group and Hitachi Rail which began in 2017 and will be completed with the provision of a fleet of over 100 trains. These vehicles are characterised by their **hybrid triple-power technology** with diesel, electric and battery-powered propulsion systems.

The FS Group is also committed to studying solutions that will be able to exploit **hydrogen**. **Qbuzz**, a subsidiary of Busitalia Sita Nord, which operates in the Netherlands, has a fleet of electric buses that has been extended by the addition of various hydrogen-powered vehicles that allow for a reduction of 687 tonnes of CO₂ every year.

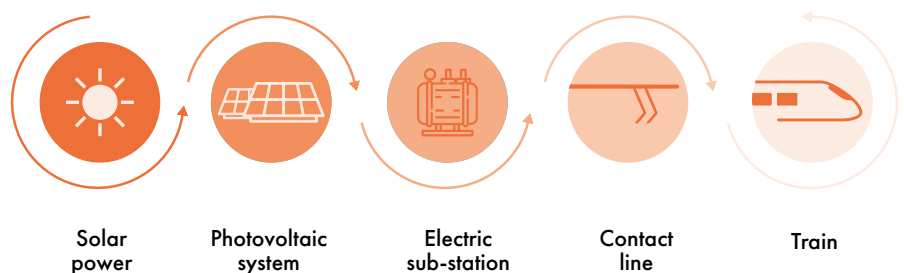
A fundamental and strategic point of the FS Group Transition Plan is the reinforcement of management and control over renewable energy. The objective can be reached by establishing a series of stages, the first of which would be the purchase of certified green energy (from renewable

sources), which the Group has already made extensive use of. In 2022 the requirement of electricity for uses other than railway traction was covered, up to a level of **approximately 64%** by **guarantee of origin (GO)** certifications relating to energy from renewable sources, and this proportion has been growing in recent years. Moving ahead, a further step concerns the realisation of an extensive project aimed at the creation of photovoltaic systems within the sphere of the Industrial Plan, capable of **covering 40% of electricity consumption** of the FS Italiane Group, including requirements for railway traction. Plans are being established for the construction of photovoltaic systems and, to a lesser extent, Min-Wind Generation systems in stations and in other spaces owned by the FS Group to **produce an output of approximately 2.6 TWh per year when fully operational**. During 2022, procedures for tenders were launched in order to identify suppliers for the construction of plants that have a fundamental role in achieving the carbon neutral objective set for 2040. In addition to having a positive impact on the climate and the environment **the certified self-generation of energy** results in a **reduction in the purchasing of electricity from the grid** and makes it possible to guarantee public transport services, limiting dependence on external sources and mitigating risks linked to fluctuations in energy prices.

GREEN ISLAND PROJECT

To promote and facilitate smart mobility, ANAS (the public body which administers the road network in Italy) has introduced the 'Green Island' project, which involves the creation of fast-charging photovoltaic stations for electric cars, equipped with data centres, shelter-type panels and solar-energy lighting systems.

From the sun to our trains



5// PERFORMANCE

METHODS FOR AN ASSESSMENT OF THE PATH AND THE DIRECTION OF PROGRESS

To comprehend whether the path undertaken is leading in the right direction it is important to have clear points of reference. The FS Group has chosen to adopt the parameters indicated by the international organisations that provide for shared objectives to be achieved and standards to comply with. These specific points of reference, complemented by European and national legislation, indicate the path to be followed in order to achieve carbon neutrality.

Adopting this approach we can evaluate the results that are obtained, in terms of consumption, emissions and - from a general point of view - our commitment. For example, FS Italiane supervises and guides decisions made relating to projects it would be appropriate to invest in on the basis of the **EU Taxonomy** criteria, and the methodology adopted for the calculation of emissions satisfies the criteria defined by the international standard ISO 14064-1:2018.

PASSENGER AND FREIGHT TRANSPORT: 'CAPILLARY', INTEGRATED MOBILITY

The FS Italiane Group offers sustainable mobility services for passengers and freight transport, mainly with trains and buses, but there are also navigation services provided by the companies Blufferies, Blujet and Busitalia - Sita Nord. The Group's production volumes include the distances covered for these transport services and are expressed in train-kilometres and bus-kilometres, i.e., the distance of one kilometre covered by the vehicle in question.

However, the production data indicating the volume of the transport service provided are expressed in the form of passenger-kilometres and tonne-kilometres, and these units of measurement are related to the transfer of a single traveller or a tonne of goods over a single kilometre with the vehicle considered.

| FREIGHT AND PASSENGER TRAFFIC IN RELATION TO TRANSPORT SERVICES (VALUES EXPRESSED IN THOUSANDS OF KM) | UNIT OF MEASUREMENT | 2022 | 2021 | 2020 |
|---|---------------------|---------|---------|---------|
| trains - passenger km | k | 284,908 | 270,216 | 242,126 |
| trains - freight km | k | 43,036 | 43,065 | 40,991 |
| bus - passenger km | k | 157,587 | 178,063 | 172,560 |

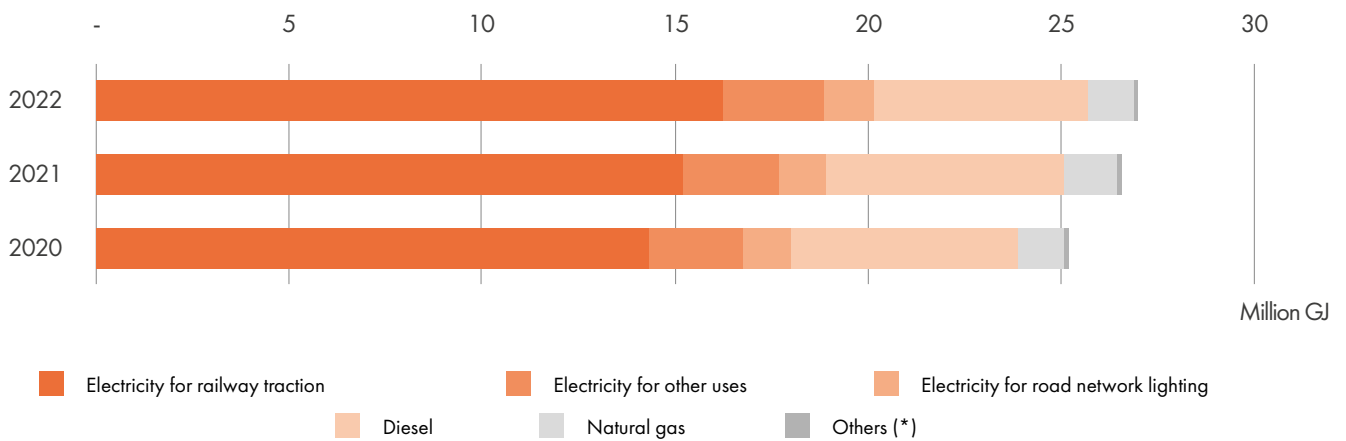
| FREIGHT AND PASSENGER TRAFFIC IN RELATION TO UNITS TRANSPORTED (VALUES EXPRESSED IN MILLIONS OF KM) | UNIT OF MEASUREMENT | 2022 | 2021 | 2020 |
|---|---------------------|--------|--------|--------|
| passengers - train km | m | 34,612 | 21,522 | 18,154 |
| tonnes - train km | m | 21,971 | 21,880 | 20,688 |
| passengers - bus km | m | 1,524 | 1,733 | 1,713 |

ENERGY: THE QUESTION OF ENERGY TRANSITION IS ESSENTIALLY A CHOICE

The FS Group is the main railway transport operator in Italy and one of the most important actors in the bus transport sector. The energy consumption necessary to provide its services is therefore significant. This is a key issue in strategic choices and an area within which many investments are made.

The **total volume of energy** consumed in 2022 amounts to **approximately 27.2 million GJ**, with an increase of approximately 1.6% compared to the previous year. This increase is principally linked to a rise in the share corresponding to railway traction (+7% vs 2021), which is the result of an ever-increasing recovery of rail traffic in the post-pandemic period, this being a value partially compensated by a **reduction in the consumption of diesel (-8.1%) and natural gas (-19.4%)**.

Final energy by source



| FINAL ENERGY CONSUMPTION OF THE FS GROUP (SOURCE) | UNIT OF MEASUREMENT | 2022 | 2021 | 2020 | DELTA % 22/21 |
|---|---------------------|-------------------|-------------------|-------------------|---------------|
| Electricity for railway traction | GJ | 16,268,047 | 15,198,255 | 14,349,986 | 7.0% |
| Electric energy for other uses | GJ | 2,589,189 | 2,505,268 | 2,409,571 | 3.3% |
| Electricity for road network lighting | GJ | 1,265,328 | 1,245,243 | 1,266,235 | 1.6% |
| Diesel | GJ | 5,649,721 | 6,144,431 | 5,864,840 | -8.1% |
| Natural gas | GJ | 1,127,079 | 1,397,711 | 1,236,602 | -19.4% |
| Biodiesel | GJ | 240,391 | 228,813 | 240,958 | 5.1% |
| Other (*) | GJ | 97,507 | 87,179 | 63,183 | 11.8% |
| TOTAL | GJ | 27,237,262 | 26,806,901 | 25,431,375 | 1.6% |

(*) Heat, petrol, LPG, fuel oil, solar thermal, pellets and hydrogen

72.4% proportion of electrified railway network

Over 2,000 km of further electrification expected over a period of 10 years

~96% proportion of energy from renewable sources (GO) on the road network

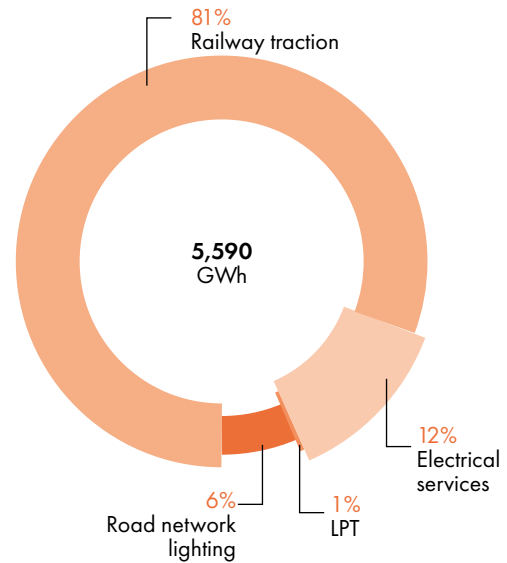
32,400 km of network, 1,612 illuminated tunnels

Electricity is definitely the main form of energy consumed by the Group. It is used for railway traction, electrical services, road and tunnel lighting and LPT, which together constitute over 73% of the total. In particular, considering the **5,590 GWh of electricity** consumed, the greatest consumption corresponds to railway traction (81% of the total), as many trains travel on an electrified network (in Italy over 70%) and use the national electricity mix, a significant proportion of which is covered by renewable sources. This is followed by electrical utilities (12%), street lighting (6%) and LPT (1%).

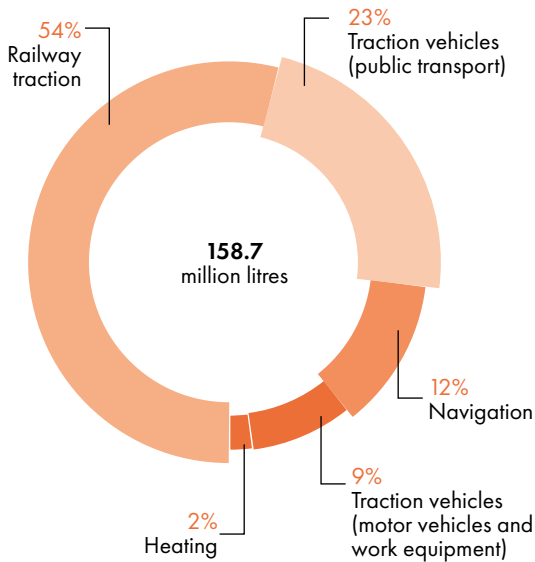
With regard to **diesel**, the overall consumption (registering a decrease compared to the previous year) is equal to approximately **158.7 million litres**, of which over a half (54%) is used for rail traction and almost a quarter (23%) for road transport. Further contributions are linked to navigation (12%), consumption for company vehicles and equipment (9%) and also heating (2%).

Finally, the **natural gas** vector presents an overall annual consumption of 32.9 million cubic metres, the main share of which (85%) is allocated to heating, followed by consumption for LPT transport (14%) and, finally, industrial activities (1%).

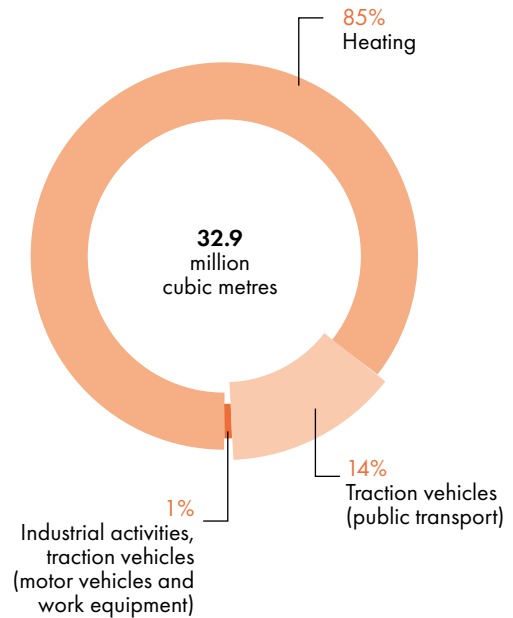
Electric energy



Diesel



Natural gas



Listed below are the Group's various energy consumption levels, according to fuel types, with an indication of certified renewable sources and non-renewable sources.

| ENERGY CONSUMPTION OF THE FS GROUP (EXCLUDING RAW MATERIALS) IN MWH | MWH FROM CERTIFIED RENEWABLE SOURCES | MWH FROM NON-RENEWABLE SOURCES | TOTAL (RENEWABLE AND NON-RENEWABLE) MWH |
|---|--------------------------------------|--------------------------------|---|
| FUEL CONSUMPTION (EXCLUDING RAW MATERIALS) | 70,673 | 1,892,804 | 1,963,476 |
| CONSUMPTION OF PURCHASED OR ACQUIRED ELECTRICITY ² | 844,146 | 4,738,657 | 5,582,803 |
| CONSUMPTION OF PURCHASED OR ACQUIRED ENERGY FOR HEATING | 0 | 11,896 | 11,896 |
| CONSUMPTION OF PURCHASED OR ACQUIRED ENERGY FOR COOLING SYSTEMS | 0 | 910 | 910 |
| CONSUMPTION OF SELF-GENERATED NON-COMBUSTIBLE RENEWABLE ENERGY | 6,820 | 0 | 6,820 |
| TOTAL ENERGY CONSUMPTION | 921,639 | 6,644,267 | 7,565,906 |

The year 2022 was marked by a further resumption of activities, following an easing of restrictions relating to the Covid-19 pandemic. This has been verified by the recovery of railway circulation, especially in terms of train-kilometres and passenger-kilometres. This increase corresponds to higher consumption levels, however at a reduced percentage with respect to production values, which bears witness to a higher degree of efficiency in specific areas of consumption, calculated as the ratio between energy used for an activity and the relative traffic units. In particular, with regard to **rail transport** for passengers, a **reduction of approximately 34%** has been noted, with a value in 2022 of 449.8 kJ/pkm. **Freight traffic and bus transport** have also presented lower values but to a lesser extent, reaching levels, respectively, of 91.7 kJ/tkm and 1,237.1 kJ/pkm.

The purchase of energy from certified renewable sources with a **Guarantee of Origin (GO)** allows for a reduction of CO₂ emissions and the development of a 'circular economy'. For example, in 2022, in Italy, the ANAS Italian road network purchased certified electricity for the lighting of roads and tunnels. Net of the share of electricity for railway traction, the remaining share of electricity is covered by approximately **64% from GO sources**, corresponding to approximately 685 GWh, this being a value that is constantly growing.

Regardless of the consumption of electricity, diesel and natural gas, the Group increasingly relies on **fuels**

from renewable sources as an alternative to the fossil types. In particular, in public transport the **proportion of biodiesel is increasing**, and in 2022 was equal to 6.5 million litres, and, likewise, the use of **hydrogen produced from renewable sources** (aka 'green' hydrogen) is expanding, reaching a value of 108 tonnes. Furthermore, the proportion of **electricity which is self-generated** and consumed by photovoltaics increased by approximately 34%, reaching a value of 6.8 GWh.

EMISSIONS: TRAVELLING, YET PAYING ATTENTION TO THE ENVIRONMENT

In line with our methodological approach, which conforms to the **GHG Protocol** standard, we classify greenhouse gas emissions, distinguishing them as pertaining to specific areas (or 'Scopes'). In particular, Scope 2 emissions are identified according to the location-based approach, however we are committed to illustrating them also by means of the market-based approach, also in our Sustainability Report.

The year 2022 was characterised by a post-pandemic **increase in transport services** and, nevertheless, there was an evident **reduction of approximately 4% in greenhouse gas emissions**, measured in CO₂ equivalents (Scope 1 and Scope 2 location-based) reaching a total of 2.01 million tonnes. The result is due to efforts made to attain a **decarbonisation of the Group**, which is

² The share of electricity produced from renewable sources in the national mix, not covered by Guarantees of Origin, is also conventionally represented as non-renewable. In fact, the current procurement mechanism does not allow for the purchase of electricity from Guarantee of Origin services for use in the railway traction sector on the RFI network in Italy.

currently based on the modernisation and an increase in the efficiency of the fleet, on having recourse to biofuels which replace fossil fuels and on the use of forms of energy of the 'Guarantee of Origin' type, which reduces carbon footprint ratings in the market-based approach. In the location-based approach the progressive **decrease of the emission factor** (linked to an energy mix which increasingly makes use of renewable sources) also contributes to the reduction of emissions.

As far as **emissions** are concerned, the main contribution is always linked to **railway traction**, in terms of both electricity and diesel. Emissions determined by the use of electricity for **lighting of the road network and other uses** and the consumption of natural gas and diesel for road transport and navigation contribute to the overall rating.

Emissions over the last three years (tCO₂e)

| TYPE OF EMISSIONS | 2022 | 2021 | 2020 | %Δ 22/21 |
|---|------------------|------------------|------------------|--------------|
| Diesel | 441,679 | 480,331 | 458,564 | -8.0% |
| Natural gas | 65,656 | 81,021 | 71,947 | -19.0% |
| Other (*) | 3,917 | 2,523 | 1,361 | 55.3% |
| Total - Scope 1 (***) | 511,252 | 563,875 | 531,871 | -9.3% |
| Electricity for railway traction | 1,212,660 | 1,229,165 | 1,269,842 | -1.3% |
| Electricity for other uses | 176,103 | 184,435 | 193,096 | -4.5% |
| Electricity for road network lighting | 91,962 | 96,728 | 105,313 | -4.9% |
| Other (**) | 18,689 | 19,940 | 16,827 | -6.3% |
| Total - Scope 2 (***) - Location Based | 1,499,414 | 1,530,268 | 1,585,077 | -2.0% |
| Total - Scope 1+2 (location based) | 2,010,666 | 2,094,143 | 2,116,948 | -4.0% |
| Electricity for railway traction | 1,216,405 | 1,220,194 | 1,282,800 | -0.3% |
| Electricity for other uses | 106,062 | 114,444 | 143,562 | -7.3% |
| Electricity for road network lighting | 5,885 | 4,871 | 102,310 | 20.8% |
| Other (**) | 5,004 | 4,985 | 4,606 | 0.4% |
| Total - Scope 2 (***) - Market Based | 1,333,357 | 1,344,494 | 1,533,277 | -0.8% |
| Total - Scope 1+2 (market Based) | 1,844,609 | 1,908,369 | 2,065,148 | -3.3% |

(*) Petrol, LPG, fuel oil, biodiesel

(**) Electricity for LPT, heat

(***) Scope 1. Emissions deriving from the direct combustion of fossil fuels, purchased for heating, for the production of electrical and thermal energy and for the refuelling of transport vehicles. Scope 2 Emissions resulting from the production of electricity purchased and consumed by the organisation for electrical equipment, heating and lighting inside buildings. The organisation is indirectly responsible for emissions generated by the supplier for the production of electricity required.



During 2022 the FS Group quantified its Scope 3 emissions, which amounted to **approximately 5.3 million tonnes of CO₂ equivalent**, differentiated according to the following relevant categories: capitalised assets and purchased goods and services (84%),

upstream energy supplies (5%), and use of the railway infrastructure by other railway companies (10%). A small percentage, equal to approximately 1%, comprises non-relevant categories.

| TYPE OF EMISSIONS | 2022 | 2021 | 2020 | %Δ 22/21 |
|--|--------------------------|------------------|------------------|------------------|
| Total indirect emissions of CO₂eq Scope 3 | tCO₂eq | 5,303,712 | 5,337,547 | 4,010,381 |
| Indirect emissions of CO₂eq Scope 3 (relevant categories - GHG Protocol) | tCO₂eq | 5,249,587 | 5,286,705 | 3,955,120 |
| - Purchased assets and services | tCO ₂ eq | 2,870 | 55,889 | 20,243 |
| - Capitalised assets | tCO ₂ eq | 4,446,082 | 4,434,491 | 3,157,825 |
| - Upstream energy supplies | tCO ₂ eq | 268,887 | 289,707 | 293,468 |
| - Use of the railway infrastructure by other railway companies | tCO ₂ eq | 531,748 | 506,619 | 483,584 |
| Indirect emissions of CO₂eq Scope 3 (non-relevant categories - GHG Protocol) | tCO₂eq | 54,125 | 50,841 | 55,261 |
| - Management of produced waste | tCO ₂ eq | 7,885 | 5,872 | 10,621 |
| - Travel for business purposes (including air travel and hotels) | tCO ₂ eq | 4,753 | 2,803 | 2,053 |
| - Rented real estate assets (tenants) | tCO ₂ eq | 10,653 | 12,239 | 12,108 |
| - Home-to-work commuting | tCO ₂ eq | 30,834 | 29,928 | 30,478 |

ISO 14064-1 CERTIFICATION

The FS Group has obtained the certification attesting to the quality of the inventory and the methodology for calculating CO emissions² equivalent, in accordance with the provisions of ISO 14064-1:2018.

Results for the years 2022 and 2019 have been certified, with the latter year representing the baseline for an evaluation of emission reduction objectives. The overviews were both conducted according to the location-based and market-based approaches, with a level of guarantee for the emissions inventory established as 'reasonable'. This means that the FS railway enterprise, which aims to achieve net zero emissions by 2040, is proceeding in a correct, accurate and transparent manner in its data collection activities and in the calculation and reporting of greenhouse gas emissions.

The result obtained reaffirms the sound nature of the decarbonisation process undertaken by the Group, inducing greater confidence in the management and monitoring of the objectives. Furthermore, it demonstrates how the great attention placed on sustainability issues is accompanied by maximum transparency, for the benefit of all stakeholders. The certificate, issued by the independent body SGS Italia accredited by Accredia (the single national accreditation body designated by the Italian government), was granted following verification procedures carried out on the Parent Company, with specific audits which saw the participation of Trenitalia, RFI, Italferr, Busitalia Sita Nord participated, Busitalia Veneto and the 'Grandi Stazioni Rail' enterprise.



FS Italiane monitors its performance also in terms of **specific emissions by service type** based on the traffic units transported and by average value, where the term Traffic Unit (TU) refers to the number of passenger-kilometres and tonne-kilometres attained.

Further indicators are the **carbon intensity factors**, obtained by relating the traffic units to overall emissions, according to the two approaches used to calculate Scope 1 and Scope 2 emissions, both location-based and market-based.

| SPECIFIC FINAL EMISSIONS IN ITALY | UM | 2022 | 2021 | 2020 |
|--|--------------------------|------|------|------|
| Emissions - Rail passenger traffic | gCO ₂ eq./pkm | 36.2 | 58.9 | 70.9 |
| Emissions - Rail freight traffic | gCO ₂ eq./tkm | 7.7 | 8.5 | 9.7 |
| Emissions - Road passenger traffic | gCO ₂ eq./pkm | 81.3 | 87.5 | 86.0 |
| Specific average emissions for transportation services | gCO ₂ eq./UT | 26.6 | 35.6 | 40.3 |

| CARBON INTENSITY OF THE FS GROUP | UNIT OF MEASUREMENT | 2022 | 2021 | 2020 |
|--|------------------------------|--------|--------|--------|
| Specific emissions of CO ₂ (location based) | (gCO ₂ eq./mglUT) | 34,647 | 46,399 | 52,203 |
| Specific emissions of CO ₂ (market based) | (gCO ₂ eq./mglUT) | 31,786 | 42,282 | 50,926 |

The proposal of choices concerning sustainable transport (**modal shift**) with a view to modifying daily travel habits implies intervening with respect to reductions in emission volumes and working towards improvements in terms of traffic, safety and pollution. A real impact has been achieved. Over the last ten years, people who have decided to travel by train rather than using a car (for purposes relating to their studies, work, leisure and tourism) have contributed to **the lowering of CO₂ emissions** in the atmosphere, resulting in a reduction of approximately **20 million tonnes of carbon dioxide**. In particular, in 2022, use of the means of transport of the FS Group contributed to a **reduction of approximately 3.2 million tonnes of CO₂ in emissions from passenger transport** cf. use of railway facilities rather than travelling by car) and a reduction of approximately **1.5 million tonnes of emissions from freight transport** (to the detriment of heavy goods vehicles).

The result of the commitment to climate change is manifested also in the improvement of the assessment relating to Climate Change scoring within the framework of the **Carbon Disclosure Project (CDP)** obtained by the FS Group in 2022: **'A-'**, a score higher than the European average and that of the railway sector.

LEVEL A-

Climate Rating 2022 -
Carbon Disclosure Project

Emissions avoided

| | 2020 | 2021 | 2022 |
|---|-------|-------|--------------|
| Emissions avoided vs private cars/heavy-goods vehicles | 2,502 | 3,056 | 4,762 |
| Trains for passenger transport | 1,037 | 1,486 | 3,169 |
| Trains for freight transport | 1,393 | 1,499 | 1,522 |
| Buses for passenger transport | 72 | 70 | 71 |

We have embarked on a path toward decarbonisation aimed at achieving carbon neutrality, with zero net emissions, and our intention is to meet ambitious medium-term targets relating to a baseline that was set in 2019. In 2022, Scope 1 and 2 emissions saw a reduction of 21.4% and Scope 3 emissions were 10% lower with respect to 2019.

| TYPE OF EMISSIONS | 2019 | 2022 | % 2022 | % TARGET 2030 | TARGET 2040 |
|------------------------------|-----------|-----------|--------|---------------|-------------|
| Scope 1 and 2 | 2,557,692 | 2,010,666 | -21.4% | -50% | Net zero |
| Scope 3 (reduced perimeter*) | 3,672,632 | 3,306,227 | -10% | -30% | |

*The Scope 3 perimeter to which the 2030 target refers relates to emissions from railway construction sites (forming part of category 2) and categories 3 and 11. For the 2040 target, the perimeter concerns the relevant categories (~99% of the Scope 3 total).

ENERGY COSTS: RESTRICTING THEIR IMPACT TO SUPPORT TRANSPORT SERVICES

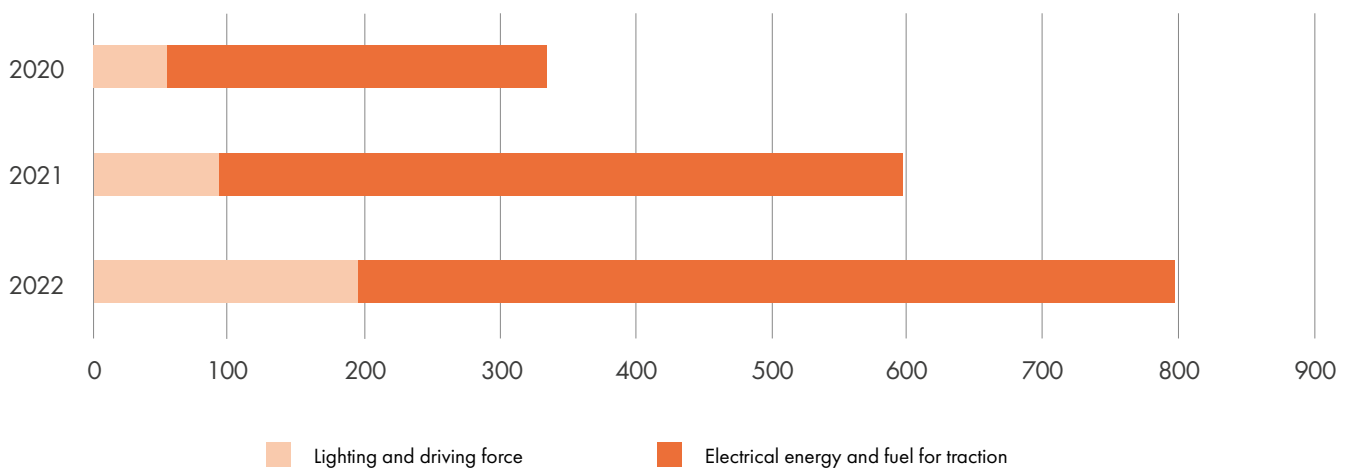
FS Italiane carefully monitors energy costs: in the last three years it has recorded a significant increase for the main energy vectors, in the case of both electricity and fuel. With respect to 2022 this increase is mainly related to **the influence on energy prices of exogenous factors**, such as the delicate geo-political situation caused by the conflict between Russia and Ukraine and resulting difficulties in the markets. These factors have had an impact in particular on the natural gas wholesale market, with repercussions occurring relating to electricity.

The upward trend in prices has affected the entire European scenario, with an impact on the costs of materials and inflation. With regard to the **rail transport** sector, the levels of energy consumption represent an important issue and their impact on operational costs (over 5%) is a critical factor that has to be monitored.

In particular, electricity and fuel used for powering railway traction networks represent the main item within the sphere of energy expenditure, which in 2022 reached an overall amount of approximately **798 million euros** (+34% compared to 2021).

The fluctuation in energy prices represents a **significant risk also for the future**, and this has become increasingly evident over the last three-year period, especially in light of the significant levels of consumption necessary to guarantee an increasingly efficient offer of mobility services. We are therefore further motivated and committed to developing medium-long term strategies to **increase the proportion of energy self-generated from renewable sources**, which may constitute a significant contribution to our decarbonisation projects.

Energy costs (M€)



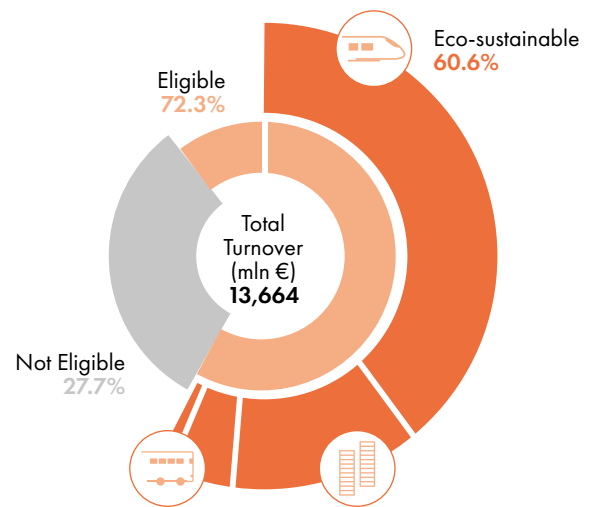
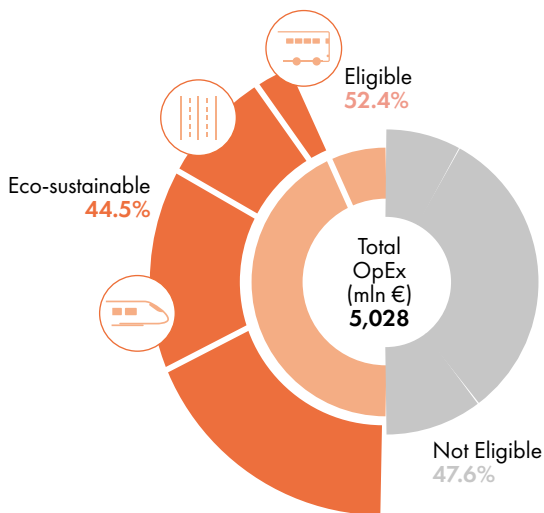
EU TAXONOMY

The 'Climate Law', i.e., Commission Delegated Regulation (EU) 2021/2139 (supplementing EU Regulation 2020/852), establishes the technical evaluation criteria which determine the conditions in which a business activity contributes in a substantial manner to the mitigation of climate change or adaptation to climate change and when it does not cause significant harm to any other environmental objective.

Over 60% of the Group's revenue may be attributed to eco-sustainable activities, with the activities relating to railway transport, passengers and goods, (42.9%) and also railway infrastructure management activities (13.5%) representing the highest contribution to achieving this result. Road transport accounts for approximately 3.7%, while road infrastructures and real-estate activities contribute to a lesser extent, accounting for approximately 0.4%.

The numerator of the Turnover KPI does not comprise revenues obtained from products and services associated with economic activities adapted to climate change.

For the year 2022, the FS Group has conducted analyses to assess alignment with the provisions of the **EU Taxonomy**. For each company forming part of the Group, it has verified the extent to which the business of the corporation is associated with economic activities considered to be sustainable.



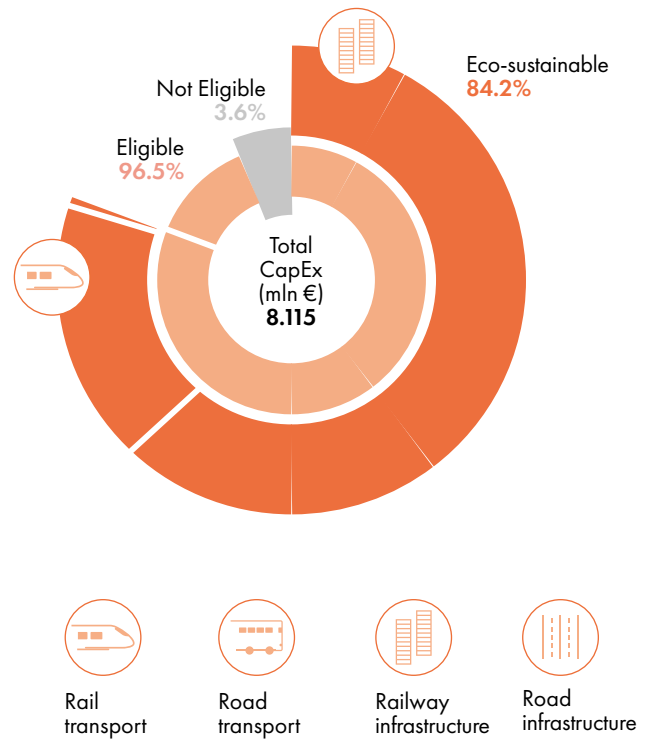
As far as **operating costs**³ are concerned, which are defined in Art. 8 of Annex I of the so-called 'delegated act', approximately 44.5% is attributable to Eco-sustainable activities. Activities relating to the railway infrastructure and rail transportation services contribute to the eco-sustainable rate, with levels of 18.7% and 17.4% respectively, road infrastructures account for approximately 6.7%, and the relative road transport value is 1.7%, while, albeit to a lesser extent, real-estate activities also offer a contribution.



3. Non-capitalised direct costs related to research and development, measures adopted to restructure buildings, short-term leasing, maintenance and repair work as well as any other direct expenses related to the daily maintenance of property, plants and machinery, undertaken by the company or by third parties to which these tasks are outsourced, required to guarantee the ongoing and effective functioning of these assets.

Over **84% of the capital expenditure** of the Group corresponds to investments in Eco-sustainable activities, which reflects the Group's commitment to contributing towards the development of a sustainable mobility system. A total of 64.9% of the aligned CapEx (capital expenditure) funds is related to the management of the railway infrastructure, approximately 19% corresponds to rail transport, while the remaining share (approx. 0.5%) is linked to road transport and real estate activities.

Furthermore, if we consider the technical investments of the ANAS road network administration entity, which contribute to the objective of adapting to climate change (falling within the scope of application of the IFRIC 12 Service Concession Arrangements⁴), the share of environmentally sustainable capital expenditure would increase by approximately **282 million Euro**.



4. For further information concerning application of the accounting principle, reference may be made to the 2022 Annual Financial Report of the FS Group

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WITH THE STAKEHOLDERS

TRAVELLING COMPANIONS ON THE ROAD TOWARDS ECOLOGICAL TRANSITION

The climate impact which may be caused by transport engenders the need for continuous dialogue and negotiation with the stakeholders. As the latter constitute a broad range of diverse entities the FS Group communicates with the same, examining and proposing different types of action for each category of stakeholders (suppliers, clients, collaborators, organisations, individual communities).

JOINTLY CREATING A COMMON PATH TO REACH A COMMON GOAL

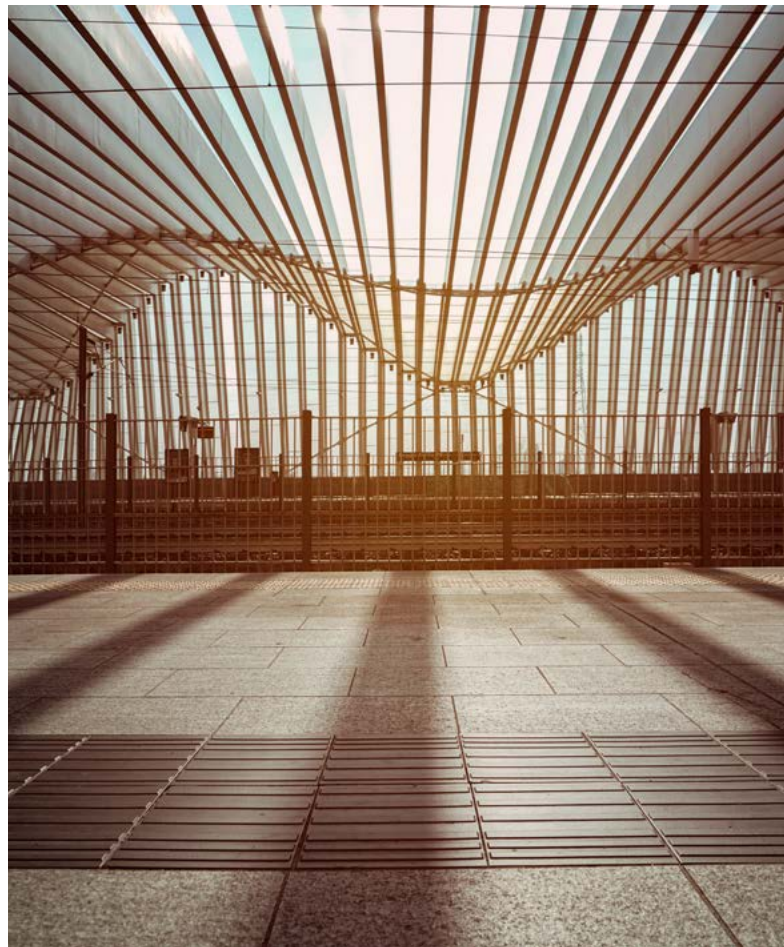
In the perspective of a shared path towards ecological transition, great attention is paid to any dissent raised by stakeholders towards new infrastructures caused by the presence of potential negative effects on the environment.

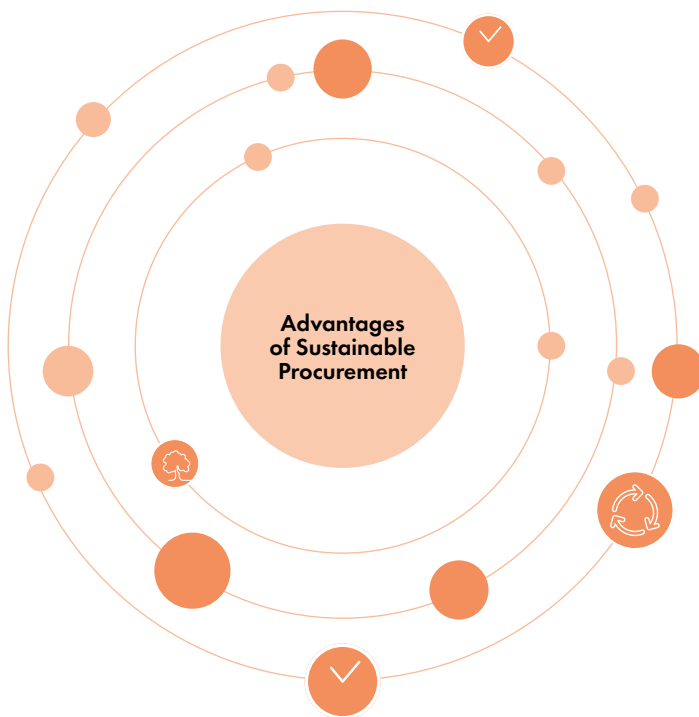
The choice made by the Group to collaborate with networks such as **GRI** and **CDP** is a sign of the commitment on the part of FS Italiane to communicate to stakeholders the information it acquires relating to climate action according to the principles of transparency, completeness and accuracy.

The **rating assigned to the FS Group by the Carbon Disclosure Project**, the international organisation that helps companies define and manage environmental impacts, bear witness to the commitment and results obtained, thanks to a collaboration occurring at multiple levels with its stakeholders. **The Group's rating rose from 'B' in 2021 to the 'A-' level in 2022, a result which is above the European average and that of the railway sector.**

SUPPLIERS

In the management of the supply chain, the FS Group pays great attention to the **environmental performance of suppliers**. The choice to include specific criteria in negotiation and tendering procedures, with a view to improving the carbon footprint and ensuring stronger control over the entire supply chain (second-level suppliers and beyond), forms part of the policies adopted by the FS Group aimed at ensuring that choices which adopt sustainability principles across the entire value chain are increasingly shared with stakeholders. The insertion of **Scope 3 emission reduction targets** in the strategy reinforces the intentions of the Group in presenting itself as an active protagonist in the fight against climate change.





- Listening to stakeholder demands
- Investor confidence
- Reducing reputational risks
- Encouraging research
- Satisfaction among supplier employees
- Management of the risk of a disruption of supply
- Improving relationships with suppliers
- The competitive advantage
- Improving behaviour
- The LCCA approach and the optimisation of costs

The objective is also pursued through the **self-assessment questionnaire** submitted to suppliers identified as strategic elements for the Group's activities. The questionnaire collects relevant information about the effect that their services or products have on the climate and environment, and allows for the monitoring and promotion of strategic activities regarding energy, CO₂ emissions and reduction of environmental impacts in general.

Furthermore, Italferr monitors the materials used, water and energy consumption and waste produced at the main railway yards and worksites in the RFI network by contractors, recording relative data through the FS Italiane Group's sustainability reporting platform.

CLIENTS

With **over 600 million passengers**, considering only subjects who use railway services in Italy, those clients who make use of the services provided by the FS Group may be seen as very important stakeholders. For this reason FS Italiane pays great attention to the environmental performance of the means of transport it provides to the public and is committed to offering sustainable and comfortable travel facilities also from the point of view of pollution and consumption, providing passengers with options, instruments (**modal shift**) and information to raise awareness of the impact their travel choices have on the environment.

The Group also periodically involves customers to evaluate its commitment to the environment, energy and the climate.

Since 2022, Trenitalia has been focusing on the **communication of information through tickets**, starting with the introduction of digital 'e-tickets'. Various messages and information concerning the company's environmental performance have been offered to clients (energy efficiency, CO₂ emissions, the 'circular economy' model, modal shifts, waste reduction measures), inviting people to participate in the development of a sustainable approach to daily life.

> 50%

Strategic suppliers that declare their consumption levels

10%

Strategic suppliers that measure the carbon footprint of their products or services

The suppliers to whom the self-assessment questionnaire was administered were selected in such a manner as to represent more than 80% of the FS Group's supplies, on the basis of their turnover with respect to FS Group companies. The data refer to the percentage corresponding to responses received.

With a view to improving supply chain and value chain management the **Sustainable Supply Chain Management** project, which establishes two important steps, was implemented during 2022:

- from 2023 onwards, the progressive application of the **ESG** score to contractors and suppliers in an active relationship with all FS Italiane companies;
- from 2026 onwards, the obligation for all companies that intend to work for the Group to undergo an ESG assessment through a dedicated IT platform. The score will be an important element for assessment.



COMMUNITIES

Referred to both in the geographical sense or in terms of particular interests, communities may be seen as important stakeholders, both as groups of subjects affected by action undertaken by the FS Group and also as subjects who, in turn, would be capable of influencing the group's endeavours. #BeGreen is a project that aims to create a synergistic relationship between FS Italiane and all those individuals who are members of particular communities and would be capable of making a contribution to support and enhance the 'culture' of ecological transition and sustainable and integrated mobility. The #BeGreen digital space on the FS Italiane website offers an opportunity to 'environmental influencers', sustainable and local tourism experts, journalists, academics and sports representatives to present any proposals they may have.

The Group specifically addresses local communities, considered as groups of people who live or work in places where the FS Italiane railway company is seen as an important service provider, in order to investigate what benefits these subjects may have obtained from the infrastructural projects realised in various geographical areas and their capacity to create value in terms of environmental development.

FS GROUP PERSONNEL

The FS Group also focuses on its internal sphere. In particular, the **PlaNet FS** awareness and training initiative was launched in 2022.

Through a specific app, **over 400 employees within the Group** have had a chance to become updated on various topics linked to sustainability and explore the commitment of FS Italiane to create value for a community in a long-lasting and responsible way. For each specific theme **various objectives have been proposed**, inviting participants to engage in concrete action through the **challenge-based gamification** approach. For example, with regards to environmental impact, travelling without using a car, preparing recipes with ingredients already present at home, ensuring a reduced impact and lower levels of energy consumption, and opting for reusable water bottles and shopping bags.

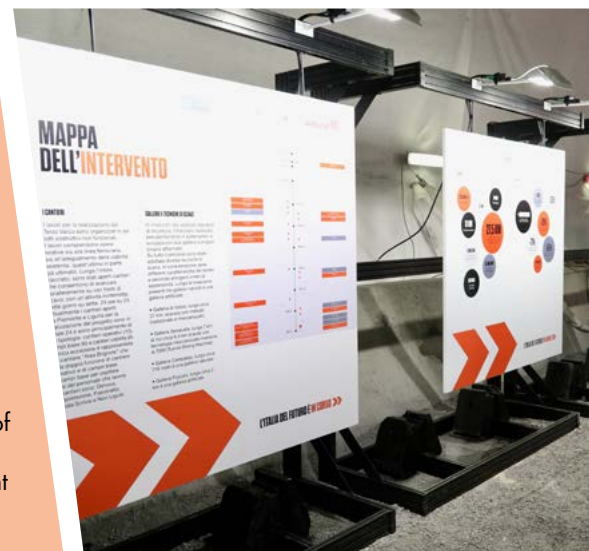
The action of all individuals who have participated has contributed towards supporting compensation projects and has been recognised and duly **rewarded** with small **ecological objects for everyday use**.

In line with the objective of the project, the three best players and the three best teams were offered an opportunity to become engaged in **two learning experiences** in Italian companies characterised by their great social and environmental impact.

Using the **PlaNet FS web app**, the participants successfully completed a total of **10,089 missions which resulted in a saving of 15,134 kg of CO₂ emissions**.

'CANTIERI PARLANTI' - ILLUSTRATING THE IMPORTANCE OF STRATEGIC WORKS

A communication facility has been developed at various worksites to provide information on the status of current works and the history and progress of projects, illustrating their objectives and critical aspects. This tool has been installed in a website which illustrates strategic works occurring in our country and where it is possible to access webcams used to capture images of various ongoing operations. The project, called 'Cantieri Parlanti' ('Worksites with a Voice'), was conceived by the FS Group, together with the companies of the FS Infrastructure Sector, RFI and Italferr, and in collaboration with the Ministry of Infrastructure and Transport. Created with the aim of clearly illustrating the works of the National Recovery and Resilience Plan (NRRP) and other endeavours, the project will feature the worksites of 30 important currently implemented strategic schemes throughout Italy. In short, the construction sites will become authentic communication hubs, reflecting the statement and 'claim' *L'Italia del futuro è in corso* ('Working towards the future of Italy').



SECTOR ORGANISATIONS AND ASSOCIATIONS

Supporting a modal shift towards **sustainable transport options** is a fundamental element of the sector's decarbonisation strategy. And it doesn't end there! In recent years there has been an increase in the awareness of how important it is to involve the various stakeholders and communicate with them, also providing concrete, reliable and highly transparent information that will illustrate the environmental impact of particular works and initiatives.

Starting from these two major strands of the strategy - the modal shift and the involvement of stakeholders - the railway sector is very active in promoting mobility that is based on sustainability metrics and this will help us understand the ecological footprint of the transport sector.

An important exchange of views on these fronts occurs with **supranational bodies and organisations**. The Corporate Affairs structure:

- participates in this sense, considering the official positions on environmental issues, in the activities of European institutions such as **the Parliament, the Commission, the Council and the European Railway Agency (ERA)**.
- It also promotes the network and rail transport in Europe through the **Community of European Railway and Infrastructure Companies (CER)** and participating in specific work groups set up by the **International Union of Railways (UIC) and the International Association of Public Transport (UITP)**

Again, within the UIC, the Group follows the annual international negotiations of the Conference of the Parties (COP) on Climate Change, the most recent of which was held in Sharm-el-Sheikh (COP27) in 2022.

FS ITALIANE AND THE EUROPEAN CLIMATE PACT

The European Commission has established the European Climate Pact: a movement of people united around a common cause, each taking steps in their own worlds to build a more sustainable Europe.

In 2022, Luigi Ferraris, the CEO of Ferrovie dello Stato Italiane, was confirmed as the ambassador of the European Climate Pact for the second consecutive year, given the role that the Ferrovie dello Stato Italiane is assuming in action taken to mitigate climate change through the reduction of the carbon footprint and the promotion of a sustainable mobility system. The ambassadors are committed to informing and inspiring the public and supporting action to tackle climate change within their own communities and contributing to the European Climate Pact.



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8// GLOSSARY

MATERIALITY ANALYSIS

Investigation and evaluation activities to identify everything that has an impact on a business activity or everything upon which a business activity may have an impact. Through this analysis, it is possible to map the relevant sustainability aspects. The result of the analysis is represented in the materiality matrix.

CARBON DISCLOSURE PROJECT (CDP)

The CDP is a non-profit organisation that manages one of the principal environmental reporting platforms recognised at the international level and which stimulates companies and governments to reduce their greenhouse gas emissions, safeguard water resources and protect forests.

DECARBONISATION

This is the process aimed at reducing the carbon/hydrogen ratio in energy sources, in order to reduce the quantity of carbon dioxide (CO₂) in the atmosphere. Reference is made to decarbonisation when policies are implemented to reduce CO₂ emissions (for example, the decision to use energy from renewable sources) or for the conversion of activities that generate them into activities at a zero emission level or in any case ensuring a lower percentage.

ENERGY DIAGNOSES

These are systematic procedures aimed at providing adequate recognition of the energy consumption profile of a building or group of buildings, of an activity or of an industrial plant providing public or private services. The diagnoses are determined in order to identify an intervention capable of reducing the consumption of energy.

WHITE CERTIFICATES

Also known as Energy Efficiency Certificates (EEC), these certificates are issued by the Electricity Market Operator (EMO) and certify the achievement of energy savings obtained through the application of efficient technologies and systems. A certificate corresponds to the saving of a tonne of oil equivalent (TOE).

NEGATIVE EMISSIONS (CARBON NEGATIVE/CLIMATE POSITIVE)

Solutions and technologies capable of removing higher quantities of carbon dioxide and greenhouse gas emissions with respect to those released into the atmosphere. A carbon negative process is a process that induces a permanent removal of CO₂ from the ecosystem.

NET-ZERO CARBON EMISSIONS OR CLIMATE NEUTRALITY

This refers to the equilibrium attained between the amount of greenhouse gases (GHG) produced and the quantity removed from the atmosphere, which is achieved through a combination of emission reduction and the removal of emissions. It does not correspond to carbon neutrality and is a term that refers to achieving zero carbon emissions by a given date.

GREEN BOND

These bonds are financial instruments, the issuance of which is linked to projects that have a positive impact on the environment, such as energy efficiency, the production of energy from clean sources, a sustainable use of land, etc.

GUARANTEE OF ORIGIN (GO)

This (electronic) certification provides an attestation of the renewable origin of sources used in IGO-qualified plants. In compliance with Directive 2009/28/EC, for each MWh of renewable electric energy fed into the grid from IGO-qualified plants the 'Gestore dei Servizi Energetici' (GSE), an Italian national-level company, will issue a GO certificate.

GHG PROTOCOL

The GHG Protocol was introduced in the 1990s. Defined by the WRI (World Resources Institute) and the WBCSD (World Business Council for Sustainable Development), this tool measures and reports the greenhouse gas emissions produced by companies, in all countries and in all sectors. The Protocol allows for the measurement of emissions of all greenhouse gases.

GLOBAL REPORT INITIATIVE (GRI)

The Global Reporting Initiative (GRI) is a non-profit organisation active in supporting companies, governments and other organisations with regard to the comprehension and communication of their sustainability impact, starting from issues such as climate change, human rights and corruption.

HVAC, SYSTEM

This acronym (Heating, Ventilation and Air-Conditioning) refers to technological systems which provide thermal comfort and acceptable indoor air quality.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

The main international body for the assessment of climate change.

LOCATION-BASED APPROACH

In the location-based approach, emissions are accounted for through the application of average national emission factors for the various countries in which electricity is acquired.

MARKET-BASED APPROACH

The market-based approach involves a calculation of emissions from electricity which an organisation has intentionally chosen on a contractual basis. The emission factors are derived from the contractual instruments, which include any type of contract between two entities for the sale and purchase of energy, in which the energy generation method is certified. The market-based calculation may provide for the use of a 'residual mix' tool if the intensity level of the emissions of an organisation is not specified in its contractual instruments.

PUBLIC, SHARED AND 'SOFT' MOBILITY

This expression refers to the offer of sustainable means of transport and travel which contributes to the reduction of the principal negative impacts of the transport sector (congestion, pollution, CO₂ emissions, etc.), such as collective transport facilities, bicycles, small electric vehicles, shared vehicles (aka 'shared mobility').

MODAL SHIFT

This term refers to a change in modes of transport, whereby an increase in the number of sustainable options is envisaged and encouraged. The plan is comprised among EU objectives relating to climate change because introducing to the greatest extent possible low-impact solutions within the transport sector, for example with respect to trains and vehicles that use renewable energy, will result in a positive impact on the quantity of climate-changing emissions.

CARBON NEUTRALITY

This corresponds to the achievement of an equilibrium between carbon emissions and their absorption. It means that every tonne of CO₂ produced by human activities must be counterbalanced by the absorption of equal quantities of carbon.

RISK CONTROL SELF-ASSESSMENT (RCSA)

This tool consists of a series of protocols aimed at identifying and evaluating operational risks and measuring the effectiveness of controls performed by the organisation to manage these hazards. The Risk Control Self Assessment is performed or updated periodically, and generally on an annual basis.

REPRESENTATIVE CONCENTRATION PATHWAYS (RCP)

RCPs are simulations of possible future climate scenarios, expressed in terms of concentrations of greenhouse gases and aerosols rather than in terms of emission levels. Through these analyses it is possible, for example, to predict what the growth in emissions may be on the basis of current rates.

SCIENCE BASED TARGETS INITIATIVE (SBTI)

This joint initiative on the part of the Carbon Disclosure Project (CDP), the UN Global Compact (UNGC), the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) develops scientific methods and criteria and drives an action plan for the mitigation of climate change in the private sector. The definition of the objectives is linked to the standards set by the Greenhouse Gas Protocol.

EUROPEAN TAXONOMY

The European Taxonomy is a classification system for economic activities considered as sustainable in Europe from the environmental point of view. The EU Taxonomy forms part of the broader Action Plan for Sustainable Finance introduced by the European Commission in 2018 with the aim of financing sustainable and inclusive growth, mainly through a reorientation of capital flows. This classification of economic activities was introduced by EU Regulation 852/2020 relating to the establishment of a framework that promotes sustainable investments and amending EU Regulation 2019/2088.

ECOLOGICAL TRANSITION

This term refers to the transition from a production system (goods or services) which is intensive and unsustainable, from the point of view of the use of resources, to a model which, on the contrary, focuses on management choices aimed at enhancing environmental, social and economic sustainability.

GENERATED ECONOMIC VALUE

The economic value that is generated corresponds to the measurable economic wealth produced over a single year. An analysis of 'added value' allows for the acquisition of an objective assessment of the economic-social impact, measuring the return generated to the benefit of stakeholders.

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