PORTFOLIO 2022

# INFRASTRUCTURES AND PUBLIC SERVICES: THE FRENCH KNOW-HOW IN THE WORLD

PROOF BY EXAMPLE

Institut de la **gestion déléguée**


MORE THAN 60 PROJECTS
IN BUILDING, MANAGING
AND FINANCING INFRASTRUCTURES
AND THE RELATED PUBLIC SERVICES

I am very pleased to present the 2022 edition of our Portfolio of French know-how in building, managing and financing infrastructures and the related public services.

This document shows more than sixty examples of recent achievements by French companies and financiers, members of our Institute, in France and around the world.

These projects reflect our national excellence in many areas such as water and sanitation, waste management, energy, public transport or road, rail, airport and cultural infrastructures.

Moreover, the entire value chain is represented, from financing to design, construction and operation. This integrated know-how, which has raised several French companies up to a position of world leadership, comes from a very long tradition of cooperation between the public and private sectors.

This history has gathered the best of the public and the best of the private sector, to the benefit of the quality and performance of public services and with a constant focus on user's satisfaction.

This Portfolio is an opportunity to pay tribute to all the members of our Institute, be they local authorities, corporate, financiers, or all their colleagues and users.

We would like to thank all the persons who contributed to the realization of this document which evidences the French know-how in the world.

**Hubert du Mesnil**
*President of IGD*

# SUMMARY

## FINANCING INFRASTRUCTURES AND RELATED PUBLIC SERVICES



## ROAD, RAILWAY, AIRPORT AND PORT INFRASTRUCTURES



## PUBLIC TRANSPORT OF PASSENGERS

INFRASTRUCTURES
AND PUBLIC SERVICES :
THE FRENCH KNOW-HOW
IN THE WORLD

# WATER AND SANITATION

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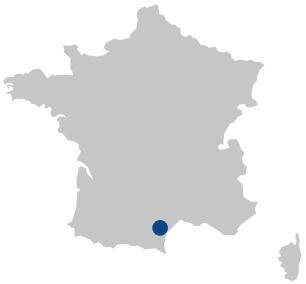
# 1ST SEMOP FOR A MISSION IN THE FIELD OF DRINKING WATER : BAS LANGUEDOC



SemOp "Eau du Bas Languedoc" plans to renew and modernize its installations to meet environmental objectives

## DELEGATION OF THE DRINKING WATER PUBLIC SERVICE

**The Syndicat du Bas Languedoc has entrusted the public service delegation of drinking water for the 27 municipalities that make up the Semi-Public Company with a Single Operation (SemOp) "Eau du Bas Languedoc", 40% owned by the local community and 60% by SUEZ. In order to measure its impact on the planet and society, the SemOp "Eau du Bas Languedoc" becomes the first benefit corporation, under France's 2019 Pact Law, in the field of drinking water.**

Its purpose is to: "Ensure access for all to a public drinking water supply service, managed in a sustainable manner." The SemOp is committed in favor of sustainable development: preserving resources by improving the performance of the service and encouraging consumption control, reducing CO2 emissions, improving energy efficiency, and protecting biodiversity.

Among the new features of the contract, households will benefit from a 10% reduction in their drinking water bill. This is made possible by a reduction in the drinking water fee and the rate for the first cubic meters consumed (from 0 to 120 m3). In addition, a solidarity fund, to which the SemOp and the Syndicat du Bas Languedoc contribute up to €10,000 per year, will be set up to help the most disadvantaged people.

To cope with climate change and population variations, the "Eau du Bas Languedoc" company plans to implement an ambitious action plan to reduce water losses: increased leak detection, network monitoring with acoustic sensors, renewal of connections, remote reading of consumption and expert tools for real-time monitoring of installations are factors that will improve the network's performance and thus ensure availability of water resources and its preservation.

### TECHNICAL CHARACTERISTICS

SemOp will provide its subscribers with traditional physical customer reception desks as well as the most modern videoconferencing tools, adapted to all audiences (foreign languages, people with disabilities).
An application will allow users who so wish to have access to personalized advice to reduce their consumption and their water and electricity bills.
The Illiwap application and the animation of social networks will ensure a dynamic communication, to address more connected audiences.

Bas Languedoc France

January 1st 2022

26 million euros investment from the SemOp

13 years

30 employees dedicated to the SemOp

# CREATION OF A HYDROGEN INDUSTRY AND DEVELOPMENT OF 10 RESOURCES AND GREEN ENERGIES

## Working to set up a hydrogen industry through the production of energy and resources from wastewater

## THE CAP ECOLOGIA BIOFACTORY

**The Pau Béarn Pyrénées (64) Agglomeration Community has entrusted the operation of a wastewater decontamination plant in Lescar and the construction of methanization and methanation plants to a consortium led by SUEZ and composed of Storengy (an ENGIE subsidiary), Egis, Sogea/Vinci and Camborde Architectes.**

As part of an unprecedented approach, the wastewater decontamination plant in Lescar now plays a key role in the local initiative for adapting to climate change. It becomes a real "production station for energies and resources" resulting from wastewater: a "Biofactory" developing 10 resources and green energies in a strong synergy approach with the surrounding infrastructures of the Cap Ecologia site. This environmental showcase is part of an ambitious regional project and consolidates the hydrogen sector in Pau while creating sustainable local jobs.
The project includes two global technological firsts, which will allow for a considerably increase in the amount of biomethane produced by the new methanization plant. They address the important issue of sewage sludge recovery, enabling the local community to anticipate future regulatory developments.

**A pioneering facility for the production of 10 energies and resources:**
The decontamination plant becomes a green energy and resource production facility, using wastewater and $CO_2$. Within a sustainable development and short-circuit circular economy approach, it will produce biomethane, synthetic methane, Biochar (energetically recoverable by Valor Béarn or through composting for farmland soil improvement), heat, electricity, nitrogen fertilizer, oxygen, green hydrogen, reused water, and vegetable crops locally.
In parallel, energy-efficient processes will be implemented and the facility will produce more energy than it consumes: a positive energy wastewater decontamination plant.

### TECHNICAL CHARACTERISTICS

**"Ultra-dehydration"** through hydrothermal carbonization is a technology which reduces sewage sludge volume by a factor of four by consuming less energy than a conventional thermal dryer all while reducing potential disturbances associated with drying. The production of synthetic methane from the methanation of carbon dioxide will make it possible to transform all the $CO_2$ emitted into synthetic methane, a renewable green gas.

Pau
France

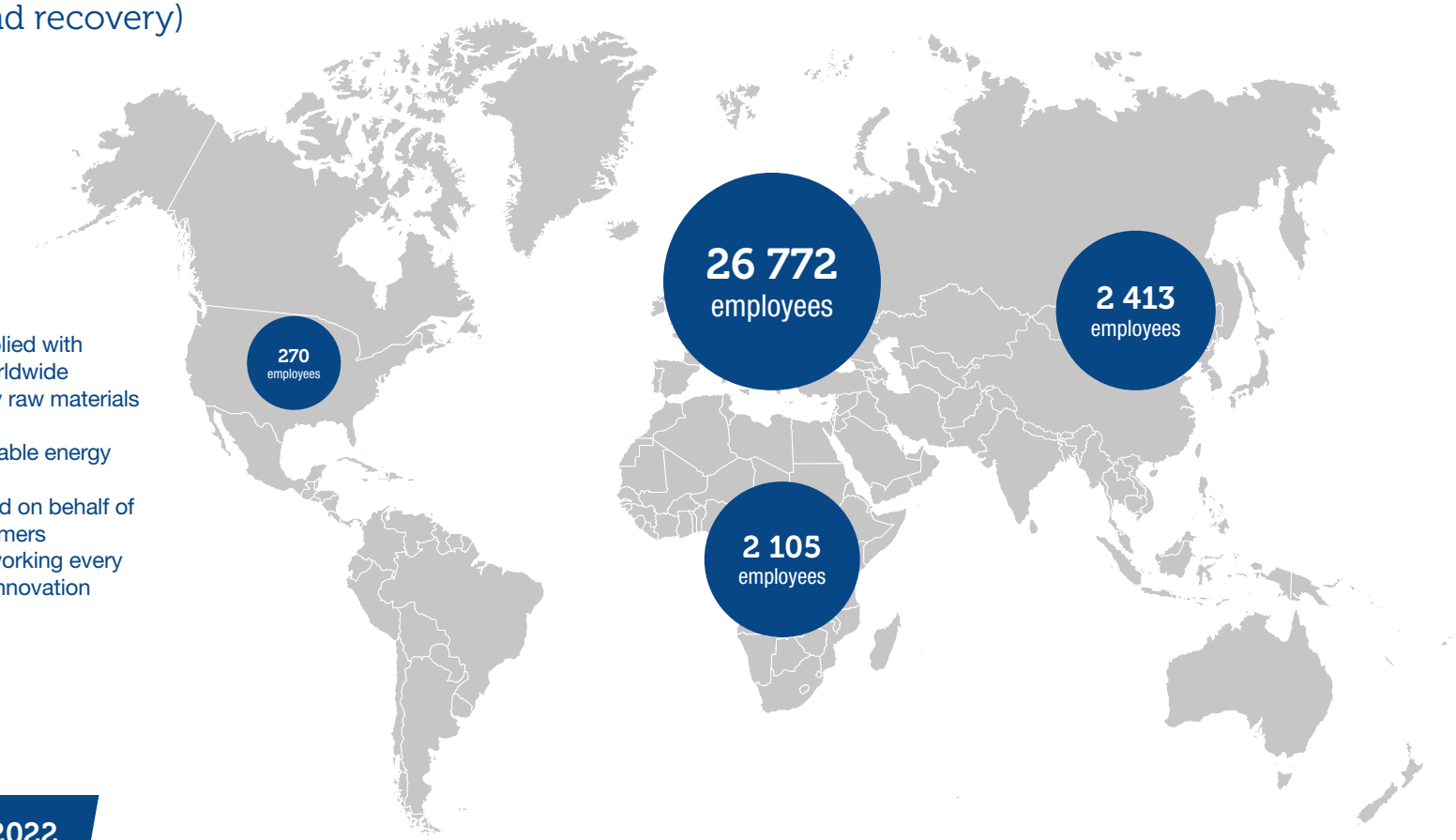
January, 2024

33 million euros of investment by the Communauté d'Agglomération Pau Béarn Pyrénées, including 4 million euros funded by the Agence de l'eau, the Région Nouvelle Aquitaine and the Ademe

construction work:
2 years, 2200 working hours
Contract : 17 years

# SUEZ IN THE WORLD

**Group activities:** smart and sustainable management of resources (water management - waste management, recycling and recovery)




- **66 M** people supplied with drinking water worldwide
- **2 Mt** of secondary raw materials produced
- **3,1 TWh** of renewable energy generated
- **4,2 $MtCO_2$** avoided on behalf of the Group's customers
- **150** researchers working every day on R&D and innovation

## KEY FIGURES 2022

| 35 000 | 4 | 22 | €7 | 917 | 1,903 |
|---|---|---|---|---|---|
| employees worldwide | continents | countries | billion revenue (5 billion € in France) | drinking water production plants | wastewater treatment plants |

# URBAN AND INDUSTRIAL WASTEWATER TREATMENT IN DAKAR

## Depollution of the Hann Bay with the Construction of an urban and industrial wastewater treatment plant

**A contract was agreed with ONAS, which was representing the Government of Senegal to design and build an urban and industrial wastewater treatment plant at Hann Bay in Dakar.**

In the 1970s, Hann Bay was considered one of the most beautiful seaside spots in the world. These days, the bay is so polluted with industrial and human waste that its waters are no longer fit for fishing or swimming. This is largely because 80% of the country's manufacturing industries are based along the bay and discharge their effluents into the sea without sufficient treatment. The bay also receives untreated domestic wastewater from homes along the shoreline.

The objective of the program undertaken by the Senegalese State is to restore the quality of the waters in the bay by reducing the quantity of wastewater discharged by industrial plants and, to a lesser extent, by households.

To make sure this plant is properly maintained and becomes a long-lasting element of infrastructure, Senegal's regulations relating to sanitation have been revised and a law will be enacted to apply the "polluters pay" principle. This will improve the sanitary conditions for the local population, protect the marine environment, and promote the return of socio-economic activities in the area, including fishing and tourism.

### TECHNICAL CHARACTERISTICS

The plant will be equipped with a more energy efficient wastewater treatment process. It will include an odor treatment system to improve the living conditions of the local residents and make it a long-lasting infrastructure locally.

The program includes a marine outfall pipe to discharge treated wastewater into the sea and a system for transporting wastewater from the bay. That system features an interceptor and pumping stations to collect effluents from industrial plants and population centers.

Dakar Sénégal | January 2020 | €49 million including €25 million for SUEZ with financial support from AFD, Invest International of the Kingdom of the Netherlands, and the European Union | 15 years | 1 200 employees

# AS SAMRA, JORDAN: A CORNERSTONE OF JORDAN'S WATER STRATEGY

VEOLIA

## High quality treated wastewater for agricultural use with positive environmental impact

© Médiathèque Veolia

Amman
Jordan

### VEOLIA'S AS SAMRA PLANT REPLACED AN OUTDATED AND POLLUTED STABILIZATION LAGOON SYSTEM

**It produces 133 million m³ per year of high quality treated wastewater for agricultural use in the Jordan Valley downstream, an agricultural area that relies heavily on treated water for irrigation.**

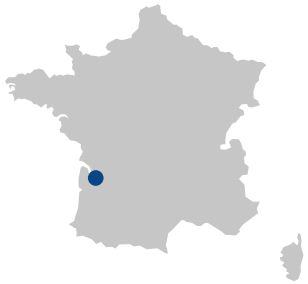
While prioritizing the optimization of energy consumption through the production of biogas and hydraulic energy recovered within the plant, the plant has an energy potential covering 87% of its needs. The 230,000 kWh of green energy produced each day represents a reduction of 40,000 tons of $CO_2$ per year.

In addition, the plant has a positive impact not only on irrigation practices but also on wildlife and its habitats. The quality of the Zarqa River has improved significantly since the commissioning of this plant. It is now considered as one of the cleanest rivers in Jordan! Restoring the quality of the river is a key component of the country's long-term water resources management strategy.

### TECHNICAL CHARACTERISTICS

- 364,000 m³ per day, the largest wastewater treatment plant in Jordan
- 87% energy self-sufficiency
- 230,000 kWh of green energy produced per day
- 40,000 tons of $CO_2$ emissions saved per year

# *BORDEAUX MÉTROPOLE* WASTEWATER SERVICES CONTRACT



## A binding contract characterized by leading innovations

© Médiathèque Veolia - Rodolphe Escher

**On January 1, 2019, Veolia was awarded the public service delegation of the Bordeaux Métropole sanitation contract. The purpose of this concession contract is to entrust SABOM (*Société d'Assainissement de Bordeaux Métropole*), a company dedicated to the execution of this 7-year contract, with the operation of public wastewater treatment and stormwater management services for the 28 municipalities that make up Bordeaux Métropole.**

It also provides for services included in the competence of managing aquatic environments and preventing river and sea flooding, which are closely linked to the management of urban stormwater throughout the geographical area.

This very binding contract (more than 650 contractual commitments with the Metropolis) is characterized by leading innovations:

- renewed governance with a Board of Directors composed of representatives of civil society
- a service of security guards composed of local agents from the integration sector;
- the use of drones for network and riverbank maintenance, which has enabled agents to be trained in drone piloting and to develop their profession;
- a customer reception area dedicated to sanitation issues in the heart of Bordeaux;
- an important educational offer with 3 educational spaces allowing to welcome schoolchildren throughout the year, one of which has been entirely redesigned;
- an original and impactful communication campaign «The Garonne[1] begins here» to raise awareness among the general public about the protection of the natural environment by promoting eco-actions;
- a sustainable development fund allocated every year to research projects (150k€) and to projects led by local associations (50k€).

### TECHNICAL CHARACTERISTICS

- 4340 km of collectors
- 159 pumping stations
- 183 retention ponds
- 95 million $m^3$ of wastewater and stormwater collected/treated

Bordeaux France

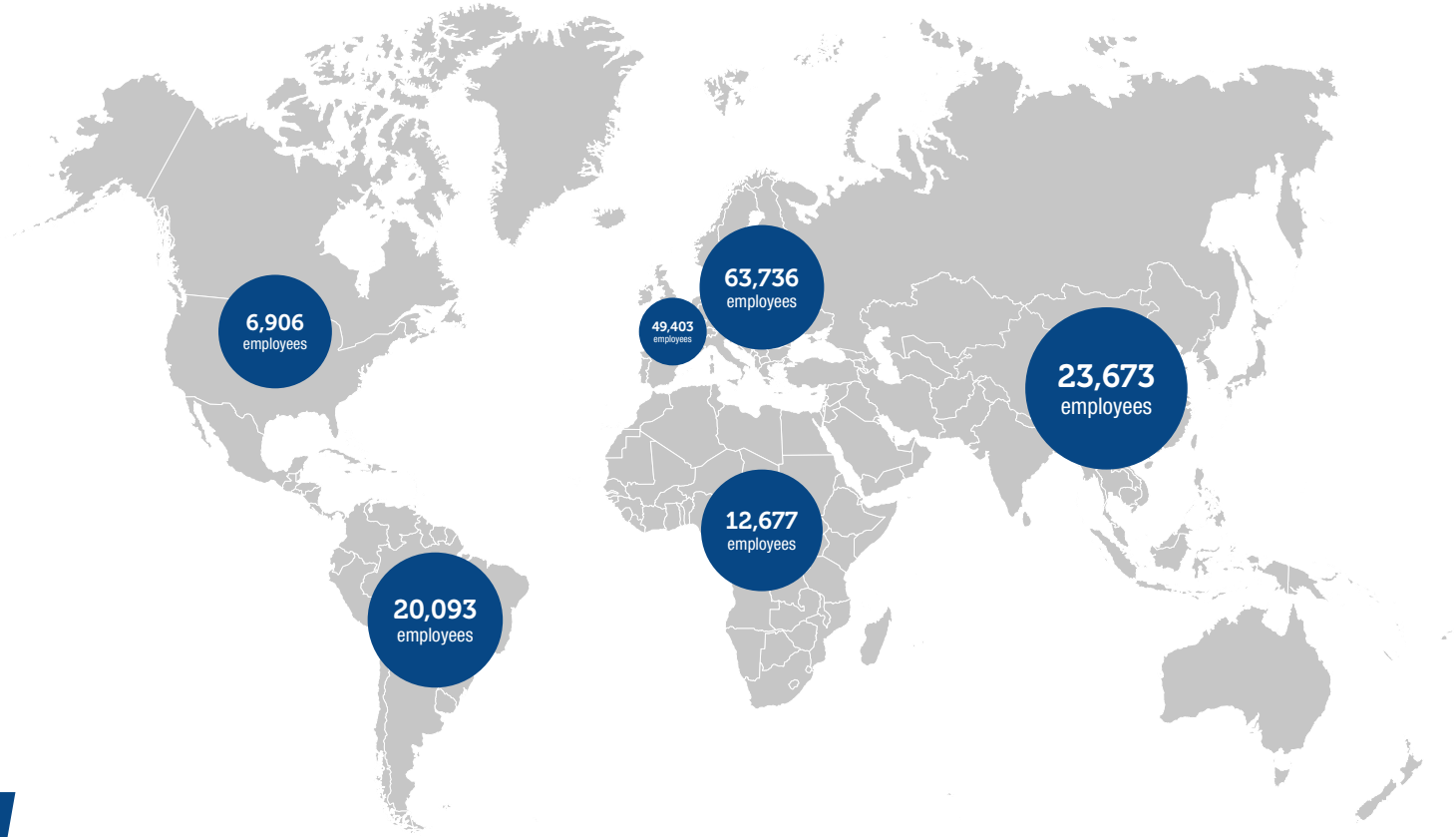
604,698 subscribers
750,000 inhabitant

6 wastewater treatment plants: Louis Fargue, Clos de Hilde, Sabarèges, Cantinolle, Lille Blanquefort, Ambès

[1] The Garonne is a river

# VEOLIA IN THE WORLD

**Group activities:** As the global champion of ecological transformation, Veolia designs and deploys useful, practical solutions for the management of water, waste and energy.




## KEY FIGURES 2021

**176,488**
collaborators worldwide

**5**
continents

**€28,508**
billion turnover, of which 30% is in France

**79** million people supplied with drinking water
**61** million people connected to wastewater systems
**48** million metric tons of recovered waste
**48** million MWh produced

# MANAGEMENT OF URBAN WATER SERVICES : 150 MUNICIPALITIES IN ILE-DE-FRANCE

VEOLIA

## Design of the ServO control centre and management of three drinking water production plants : Syndicat des Eaux d'Île-de-France (SEDIF)


**At the time of the Greater Paris project and reflection on the pooling of resources and the streamlining of production tools, Syndicat des Eaux d'Île-de-France (SEDIF), the largest public utility in France, focuses on customer satisfaction and the sustainability of management combining transparency and performance for cost effectiveness.**

Even though it is at its first Climate Water Energy Plan, SEDIF intends to reduce the energy consumption of its equipment and its greenhouse gas emissions and better preserve the resource.

At the heart of the system, ServO - a hypervision and remote control centre equipped with artificial intelligence - was developed by Veolia Eau Île-de-France, a Veolia subsidiary. Fully operational since 2016, ServO - also known as a piloting center, a virtual platform that allows multiple operating systems to work together at the same time - provides a 360° view of the network.

**762 000 m³**
Average volume of drinking water supplied every day

**10%**
Leak rate target for 2020 (against 12.5 in 2016)

**1.250 billion**
Volume of data processed in real time by ServO

### TECHNICAL CHARACTERISTICS

- **The ServO piloting center receives all the technical data from SEDIF's three main plants located in Méry-sur-Oise**, Choisy-le-Roi, and Neuilly-sur-Marne as well as secondary sites, such as reservoirs and water towers. Equipped with 1000 management rules, it recovers, calculates, and crosses nearly 1.250 billion bytes of real-time data, from the river up to customer homes. As it is connected to water production, transportation, storage, and supply locations, it can instantly detect dysfunctions. It can also detect deteriorations in water quality, altered by an unsuitable temperature or pressure or by the presence of chemicals. This is made possible by 200 sensors positioned in risk areas in the Oise, Seine, and Marne.
- **ServO also uses 1 700 Res'Echo sensors to locate water leaks in the pipes** which cannot be detected by a person.
- **ServO mobilises a hundred people**: field operators in charge of repairing water cuts, heads of equipment maintenance stations, and technicians in charge of the various PLCs. All of the data can be viewed by each operator on a computer, tablet, or smartphone. ServO also integrates volumes consumed, calculated from remote reading indexes, from the fixed network. It thus makes it possible to relate the Volumes put in Distribution with the Volumes consumed by sector. This allows a reinforced management of the network.

Ile-de-France
France

Renewed
in 2011

4.6 million
customers

12 years

# EDWARD C. LITTLE WATER RECYCLING FACILITY

VEOLIA

## Preserving water resources to ensure sustainable supplies in arid regions

© Médiathèque Veolia

### ONE OF THE LARGEST FACILITIES OF ITS KIND IN THE UNITED STATES

In a region where drought has been rampant since the 1970s and where about 60% of the water consumed is imported, the Veolia's Edward C. Little water recycling facility, operated and maintained by Veolia, supplies up to 180,000 $m^3$ per day of reusable treated wastewater in five different qualities to meet the specific needs of 300 municipal and industrial customers:

- High pressure boiler feed water
- Low pressure boiler feed water
- Denitrified cooling tower feed water
- Non-potable recycled water (irrigation, industrial use)
- Groundwater injection water for saltwater intrusion barrier. The facility produces up to 60,000 $m^3$ of water per day to replenish groundwater. This purified water is continuously injected into 153 coastal wells in the South Bay, strategically placed to protect them from seawater intrusion.

**Since 1995, this facility has reduced imported water supply by over 1 billion cubic meters.**

The plant has been recognized by the National Water Research Institute as one of six National Centers for Water Treatment Technologies.

West Basin
USA, California

300 municipal and industrial customers

180,000 $m^3$ per day of reusable treated wastewater

5 different qualities of treated water according to specific needs

# SLUDGE TREATMENT FACILITY IN HONG KONG

VEOLIA

## Veolia built a truly innovative complex, fully autonomous and self-sufficient in energy and water: T PARK

### DESIGN, BUILD, AND OPERATE THE WORLD'S LARGEST SLUDGE TREATMENT FACILITY CALLED T PARK

**Hong Kong produces nearly three million cubic metres of sewage per day which is results in about 1,200 tonnes of sludge after treatment. This amount is expected to reach 2,000 tonnes per day in 2030. Until 2015, this sludge was disposed of at landfills.**

The customer's objectives are to provide a state-of-the-art, sustainable incineration technology solution to the massive and growing volume of sewage sludge and to raise public awareness on the environment.

T PARK is 100% energy independent with two 14 MW turbines that operate with steam produced during sludge incineration. When the facility is operating at full capacity, approximately 2 MW of surplus electricity is expected to be exported to the public power grid.

T PARK is 100% self-sufficient in clean water - supplied by the on-site seawater desalination plant - and process water - rainwater collection and wastewater treatment to achieve 'zero effluent discharge'.

T PARK diverts over 90% of Hong Kong sewage sludge from landfills. The facility operates with the thermal energy produced during sludge incineration, which is recovered and converted into electricity.

### TECHNICAL CHARACTERISTICS

- Incineration: sludge inflow, fluidised bed incineration, and steam boilers.
- Treatment of gas emissions: DeNOx to control nitrogen oxide emissions, dry reactor to reduce acidic gases, multi-cyclone filter and pocket filter.
- Water treatment: Multiflo™, reverse osmosis.
- Wastewater treatment: flocculation, MBBR.

Hong Kong China | Inauguration in 2015 | 7.4 millions inhabitants | 11 wastewater treatment plants | 15 years operations

# INFRASTRUCTURES AND PUBLIC SERVICES : THE FRENCH KNOW-HOW IN THE WORLD

## WASTE

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# WASTE COLLECTION AND MANAGEMENT IN MONTAUBAN

## Integrated prevention and management solutions for waste collection and management of waste and recycling centers

Created and supported by ADEME, the Household and Assimilated Waste Performance Contract aims to integrate goals of prevention, recycling and improvement of the living environment beyond waste collection alone. It enables the construction of integrated prevention and management solutions to go beyond the traditional model of the volume of waste to be treated and create a more eco-responsible and collaborative economic model for the benefit of the community, users, and local economic players.

To achieve the performance objectives of the Grand Montauban agglomeration, SUEZ will implement innovative and collaborative actions to promote waste prevention, reduction and reuse. Based on their waste production and habits, local incentive communication will enable residents to adopt new behaviors to reduce their waste production.

**Solutions designed and implemented with Montauban's social economy partners.**
SUEZ designs these innovative and collaborative solutions by linking the engineering and know-how of its teams with the field knowledge and expertise of its local social economy partners: Montauban services, Emmaüs 82, IDDES 82, the CPIE Quercy Garonne, and the Opteo Foundation. Each of them will intervene in their own field of competence on the issues of waste prevention and reduction, bio-waste recovery, or re-use.
In order to promote and develop employment and integration in the region, the hiring of work-study contracts, civic services and support for start-ups focused on the circular economy will complete this scheme.

### TECHNICAL CHARACTERISTICS

Within the framework of the national experiment on the implementation of a CPDMA, 4 pioneer communities have committed themselves.
**The attribution of the next 3 CPDMA** is planned between January and June 2022, for a start of the services on January 1st 2023. A global evaluation of the program and a communication extended to the 4 communities will be carried out in the first half of 2023.

Montauban
France

January 1st 2022

7 years

90 employees including
45 direct integration jobs

# CONSTRUCTION WASTE RECYCLING IN CHINA

## Operation and maintenance of a construction waste recycling plant in Zhejiang province

The agreement provides for the creation of a joint venture between SUEZ (33%) and Anji (67%) to operate and maintain a construction waste recycling plant in Anji, located in Zhejiang province, for a period of 20 years. The project, led by Anji, will process approximately 380,000 tons of construction waste per year, while meeting the highest environmental standards. Following SUEZ's successful experience in Changshu, it represents another major national R&D project in the field of construction waste treatment.
The Anji project will mirror the «Changshu model» initiated by SUEZ in 2018 for the reuse of construction waste into new resources, and will rely on Internet and Internet of Things technologies, customized treatment processes, bespoke equipment, and a smart, digital platform that monitors the entire process of waste collection, transfer, and treatment

SUEZ, through this local joint venture, was awarded a 30-year, build-and-operate contract for an industrial wastewater treatment plant in Changshu. This expands the already-broad strategic partnership between SUEZ and the City of Changshu, which spans a portfolio of water, wastewater, and waste management projects. The project will reinforce the high quality, environmentally sustainable development for Changshu's economy.

### TECHNICAL CHARACTERISTICS

The project will also integrate intelligent sorting facilities to efficiently and precisely treat construction waste, to achieve minimum reuse rate of construction waste of 85%. The recycled construction aggregates will be used to produce bricks, curbstone, or road bedding for different purposes; combustible materials will be supplied to waste incineration plants as fuel for power generation. Additionally, metallic materials will be reused directly.

Anji, Changshu Chine

Plant commissioning: Q1 2023

20 years

Investment amount for the plant: 37 million euros

110 people are planned

# FURNITURE WASTE: ROBOTIZED SORTING

## Rob'Inn: a more efficient remote-operated and robotized tool for sorting furniture waste

© Médiathèque Veolia - Rodolphe Escher

**Equipped with a robotic arm and a gripper adapted to furniture waste, Rob'inn allows the sorting and recovery of wood, plastics, upholstered items and scrap metal. Once sorted, the waste can be sent to the appropriate channels that will transform it into new furniture, insulating panels, pipes, etc.**

Thanks to a remote operation technology, the operator identifies and designates on a touch screen the elements to be removed from the flow. A vision algorithm provides a choice of object to pickup that facilitates the decision. Once the objects have been designated and the robot has been given the order to pick them up, they are then distributed into specific containers for each material before being sent to the recycling channels.

Thanks to the performance of the software functions and of the technical installations, Rob'inn increases the sorting rate of the furniture waste by a factor of 3 compared to the sorting with the mechanical shovel usually used. With Rob'Inn, 95% of furniture waste is recycled or recovered.

In addition to this technical performance, Rob'inn offers perfectly adapted work ergonomics that reduce operators musculoskeletal disorders. The process also ensures safety and comfort for the sorting agents thanks to a completely glazed cabin which eliminates any physical contact between the operator and the waste. It has eliminated all risks related to the co-activity of vehicles and pedestrians.

3 times more productive than sorting with a shovel

More safety for operators

95%: the recovery rate for furniture waste

# CLEANING SERVICES MANAGEMENT IN BUENOS AIRES

VEOLIA

## Collection of solid household waste and urban cleanliness of Zone 1 of the Argentine capital


**To meet the objectives of the «Zero Waste» law adopted in 2006, the city of Buenos Aires entrusts to Veolia the collection of solid household waste and the urban cleanliness of Zone 1 and its 6 key neighborhoods: Retiro, San Nicolás, Puerto Madero, San Telmo, Monserrat and Constitución.**

A dense and complex urban area, with significant population and transport flows, which concentrates economic and tourist activities. With its large population and over 12,000 commercial and service buildings, Zone 1 is the most complex part of the city to operate.

Partner of the city since 1998, Veolia has been providing a complete public service of urban cleanliness since 2014 - garbage collection, manual cleaning and daily mechanics - in the heart of emblematic districts of the Argentine capital. In order to improve service performance and hygiene, Veolia deploys and implements total containerization of waste in the sector. For this contract, Veolia and the municipality created the AESA Buenos Aires entity.

### TECHNICAL CHARACTERISTICS

More and more integrated and connected urban waste collection and hygiene services:
- collection routes are optimized through sector programs, planning and GPS systems that support the fleet of vehicles in real time;
- employees have mobile devices to report incidents, fill sensors, equip containers...

**2,700 containers**
installed

**6,000 tonnes**
of waste generated every day in the city

Buenos Aires
Argentina

206,000 inhabitants + daily floating population of 1.5 million people

105 collection routes
550 manual sweeping routes
81 mechanical sweeping and hydro-washing routes

14 years

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# CIRCULAR ECONOMY

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# FRANCE: THE STORY OF A FRIDGE RECYCLED AS A SIM CARD

## A comprehensive commitment to the environment


**To connect cell phones to mobile operator networks, 4.5 billion SIM cards were produced worldwide in 2020, generating a significant amount of $CO_2$ and plastic. Veolia has chosen to green this market by partnering with Thales to create the first eco-designed SIM card made from recycled plastic.**

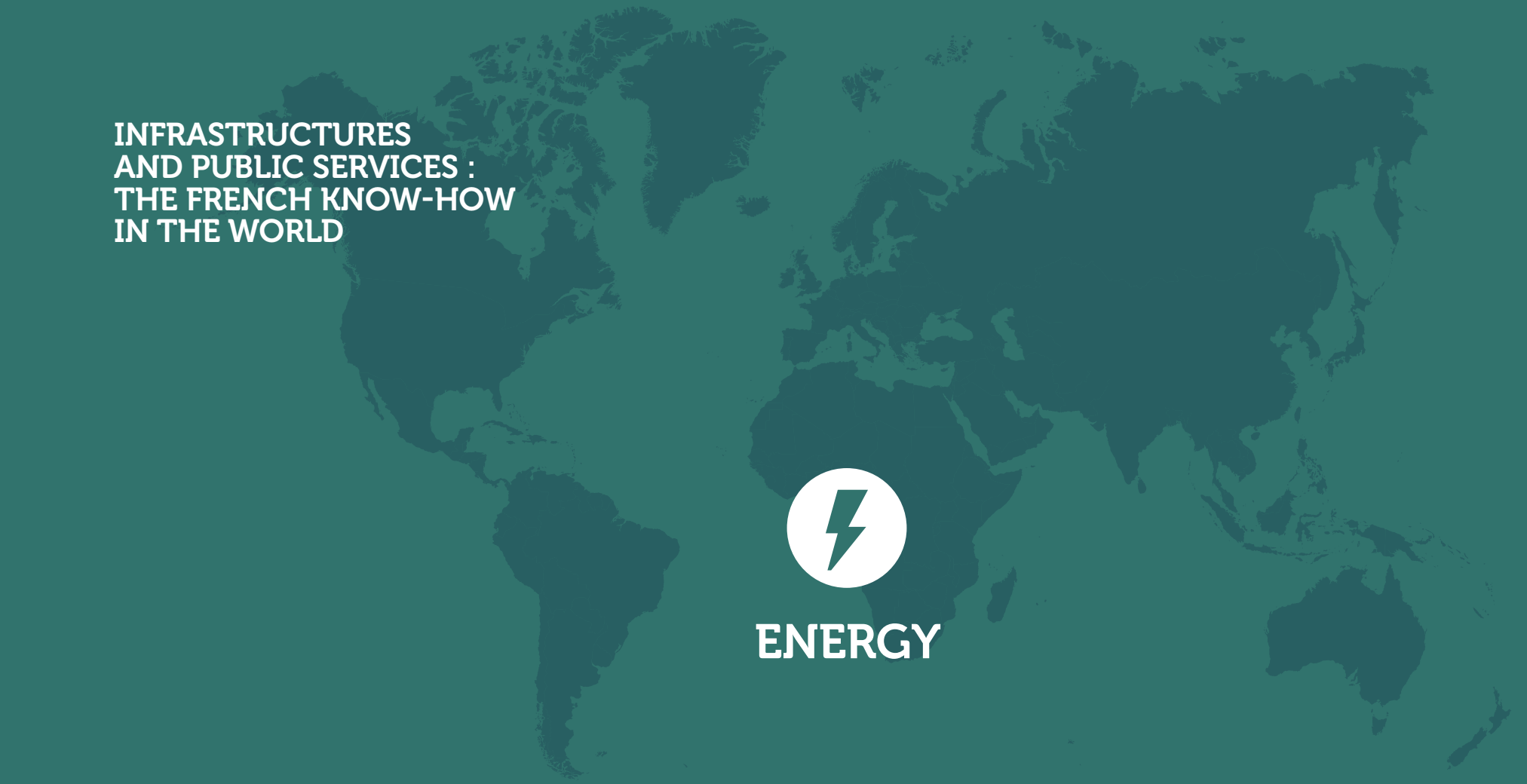
The plastic, which is mainly sourced from refrigerators, is transformed into granules at Veolia's recycling plant in Froissy, in the Picardy region in France. A new manufacturing process converts these granules into eco-SIM cards that meet industry requirements and international standards. This first eco-designed SIM card avoids the production of 5,000 metric tons of virgin plastic and the emission of 15,000 metric tons of $CO_2$. And at the end of life, the plastic used to make the cards can be recycled and used again.

With a neutral carbon footprint* and a recycled-plastic design, this new product helps mobile operators in their ecological transformation and responds much more closely to their subscribers' environmental concerns.

**All the $CO_2$ emissions associated with the eco-SIM cards manufacture and with the chip's non-recyclable electronic components are fully offset by Thales' global carbon offset program*

France | 15,000 tons of $CO_2$ emissions avoided | 5000 tons less of virgin plastic to produce

# INFRASTRUCTURES AND PUBLIC SERVICES : THE FRENCH KNOW-HOW IN THE WORLD



## ENERGY

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PROOF BY EXAMPLE

# BIOMASS HEATING AND COOLING NETWORK OF THE "GRAND LYON" METROPOLIS

dalkia
GROUPE EDF

## The first green network in France

© Francois Fevre

## PUBLIC SERVICE DELEGATION

**The Metropolis of "Grand Lyon" has chosen to entrust Dalkia with the heating and cooling network of the Centre Lyon sector for twenty-five years. The aim is to lower the prices of district heating and accelerate the energy transition. This involves the development of the network, while increasing the share of renewable energy, wood and recovery in its energy mix.**

Dalkia is investing 285 million euros to double the heating and cooling network. Currently, about 70,000 households are connected to this district heating network which extends into six districts of Lyon, as well as in Vaulx-en-Velin (Carré de Soie), Vénissieux Nord and Bron. By 2030, the goal is to reach the equivalent of 220,000 dwellings. The cooling network only covers office buildings and some public facilities, such as the Part-Dieu shopping center, or the auditorium. For the user, the heating bill is about 15% lower than a conventional condensation collective gas heating. Valuing 85% of the energy from the energy recovery plant of household waste Gerland, reinforced in 2019 by the opening of the Surville biomass plant, this network will reach this year 65% of renewable energy. At term, Dalkia wants to reach 70%. Through this process, an average of 126,000 tonnes of $CO_2$ will be avoided per year, which corresponds to 50,000 vehicles that would not be driving each year.

### TECHNICAL CHARACTERISTICS

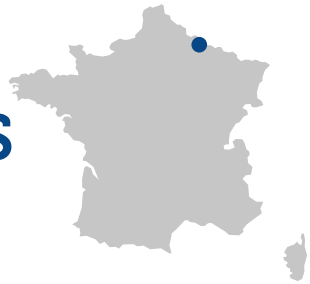
- 285 million euros of investment for the development of the network and the renovation of the facilities (470 substations, reconfiguration of the production plants) ;
- 15% savings on the energy bills ;
- High-performance and innovative technical choices: low-temperature network, connection of facilities to Dalkia's energy performance control centre (DESC, Dalkia Energy Savings Center), thermal storage, etc.
- A cold network sized to meet the development challenges of the Part-Dieu business district ;
- 932 GWh of heat delivered, which is 3 times more than with the current network and 91 GWh of cold delivered ;
- 85% of the energy of the Gerland household waste energy plant valued ;
- 2nd French urban heat network after that of La Défense, but 1st green network in France with a renewable energy rate of 65% in 2019.

Lyon
France

January 2018

25 years

# CHARLEVILLE-MÉZIÈRES HEATING NETWORK



dalkia GROUPE EDF

## Heat recovery from Stellantis plants to fight against energy waste

### PUBLIC SERVICE DELEGATION WITH THE CITY

**For the decarbonization of the territory, Dalkia values local resources by fetching energy where it is available. This is the case in Charleville-Mézières, in the Ardennes, where Dalkia and Stellantis are committed to an exemplary project in the field of circular economy and the fight against energy waste.**

As part of a 25-year public service delegation, Dalkia has extended the La Citadelle heating network, in the city of Charleville-Mézières, while optimizing the existing heat production facilities. Among these means: the site of the first employer in the city, the foundry that makes the raw parts for the Stellantis group's vehicles.

The 28,000 MWh thermal generated by the furnaces of the foundry feed more than 3,000 equivalent housing (against 930 previously) and the hospital center. The network, which operated 100% on gas, is now supplied by nearly 60% renewable and recovery energy, which prevents the emission of 7,000 tonnes of $CO_2$ annually. Twenty jobs have been created.

This investment of almost 10 million euros carried by Dalkia, including four million from the «Heat Fund» of the Agency for the Environment and Energy Management (ADEME), is a win-win. On the one hand, heating users see their energy bills fall by around 15%; on the other hand, Stellantis sells Dalkia the so-called residual heat of its foundry kilns which, according to the director of the Ardennes site of Stellantis, "were only used to heat the birds".

### TECHNICAL CHARACTERISTICS

- Revaluation of 28 GWh/year on the city network;
- Nearly 60% renewable and recovery energy;
- 7,000 tons of $CO_2$ avoided per year;
- 10-year commitment: heat recovery;
- Increased competitiveness of the industrial site;
- 3000 equivalent-housing + 1 hospital;
- Tripling the length of the network to 12km.

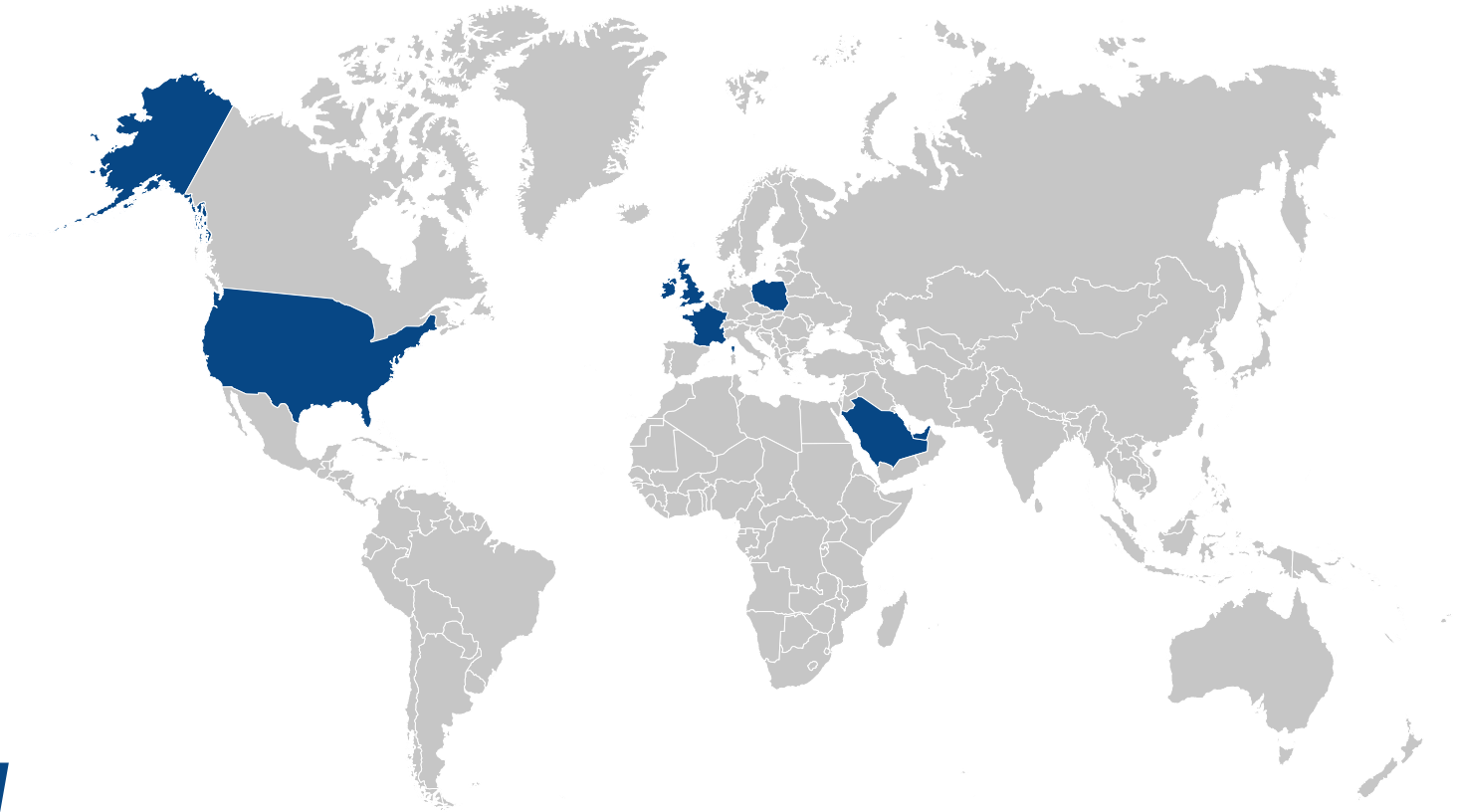
Charleville-Mézières
France

February 2019

25 years

# DALKIA IN THE WORLD

**Group activities:** heat and cold networks, energy services to industrialists, energy services to buildings

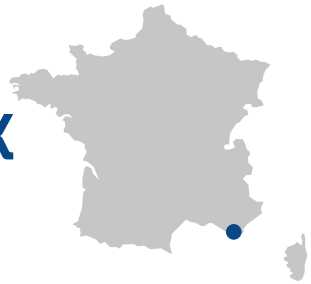


## KEY FIGURES 2022

| | | | | | |
|---|---|---|---|---|---|
| More than **19,000** employees in the world | **7** countries | **2,500** new hires in France each year | More than **330** heating and cooling networks in operation | More than **2,500** industrial production sites and workshops | **2** million collective housing units heated in France |

Septembre 2022 - Conception graphique : trente-fevrier@orange.fr - Impression : Optimum Impression

# THALASSOTHERMY NETWORK IN LA SEYNE-SUR-MER



## Un virtuous network powered by the calories of seawater

© Olivier Pastor TPM

## CONCESSION

**The Toulon Provence Mediterranean Metropolis and the city of La Seyne-sur-Mer chose Dalkia for the development, management and operation for 20 years of the urban network of the commune of La Seyne-sur-Mer (south of Toulon) 75% powered by a renewable and local energy source: the Mediterranean.**

This relatively small network (1.6 km at term) consists of a temperate water loop that connects a seawater collection station to heat pumps installed in the connected buildings. These heat pumps increase or decrease the temperature of the water loop, which is captured in the sea at a temperature between 12 and 25 degrees Celsius depending on the season, in order to produce heating, air conditioning and hot sanitary water. The heat resulting from the production of air conditioning is also recovered to feed the network in a logic of circular economy.
Supported by the South Region and ADEME as part of the Heat Fund, this innovative technology can supply 75% of the heating and cooling network with renewable and inexhaustible energy, thus avoiding the emission of 1,149 tonnes of $CO_2$ per year. Subscribers' energy bill is expected to fall by an average of 15%, thus combating energy insecurity in the territory.

All substations are connected to the Dalkia Energy Savings Center (Desc), a digital control center combining human, technological and artificial intelligence. A true thermal smart grid, the heating and cooling network of the municipality of La Seyne-sur-Mer is thus piloted in real time to meet subscribers. This modernization of the network, coupled with its expansion, allows Dalkia to commit to ensuring energy savings while ensuring the end-users' enduring well-being.

### TECHNICAL CHARACTERISTICS

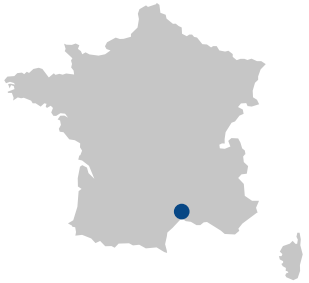
- 75% renewable and recovery energy;
- 370 equivalent-housing;
- 15% reduction on the energy bill;
- 500m of network, with an extension of 1.1 km;
- 7 MW of hot and cold production capacity,
- 1,149 tonnes of CO2 avoided per year.

Seyne-sur-Mer
France

June 2018

20 years

# INAUGURATION OF THE FIRST ZERO EMISSION GENERATOR



## A temporary, decarbonised power supply in the event of network outages


**In 2019, Enedis and the departmental energy syndicate for the Gard region, SMEG, signed an agreement around the Zero Emission Generator.**

This is the first project initiated by Enedis to reduce CO2 emissions and noise levels compared to diesel-powered generators used during maintenance operations (network modernisation works, pruning, etc.).

The Zero Emission Generator is a mobile battery in the form of a transport container designed to ensure that customers enjoy an uninterrupted supply of electricity, particularly during planned outages for network repairs.

When Enedis carries out maintenance or repair works on the network, it is sometimes necessary to disconnect the electricity line while ensuring the continuity of the power supply using diesel generators. The Zero Emission Generator replaces this interim diesel power supply and allows locally produced renewable energy to be stored and distributed. 7 demonstrations of zero emission generators have been launched in France.

Several partnerships between the regional directorates of Enedis and industrial companies make it possible to harness different types of technologies for the creation and commissioning of Zero Emission Generators: battery, fuel cell, H2, Hybrid battery/diesel. Beyond the Gard region, these experiments are underway in the regions of Centre-Val de Loire, Alsace Franche Comté, Brittany, and Pays de la Loire.

### TECHNICAL FEATURES

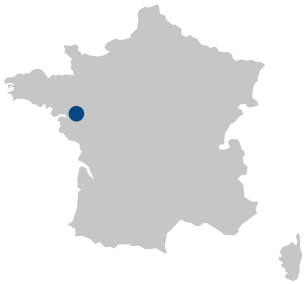
- Power 60 kW
- Capacity 200 kWh or more than 3 hours at full power

Gard
France

Enedis has invested approximately €500,000 in this first prototype, including acquisition and development of the equipment tested by the R&D teams

A Zero Emission Generator was connected for the first time in real-life conditions on 8th February 2021

# LA FLEURIAYE NANTES



## The largest self supply community project in France

© Valéry Joncheray

Nantes
France

**Enedis is fully committed to developing new uses of electricity, such as individual and collective self-supply.**

This principle of local energy sharing allows a group of consumers and electricity generators to collaborate in local renewable electricity generation as part of a single organisation. Enedis, a public service company committed to the green transition in France, supports all its customers in their projects, in particular by successfully completing a major industrial project to deploy 35 million Linky smart meters throughout France.

In Carquefou, to the east of Nantes, Enedis has supported Loire-Atlantique Développement SELA in the construction of the La Fleuriaye Ouest demonstration site, the largest operation carried out so far in France (PassivHaus certified). This operation will eventually involve over 300 housing units and 5,000 m² of commercial premises with solar panels installed on their roofs. The objective is to achieve 100% coverage with renewable energy for all uses.

In the La Fleuriaye district, the challenge is not to consume on site the energy produced by the solar panels installed on the roofs of the buildings, but rather to achieve energy balance in the district: solar generation should be equal in kW to the inhabitants' energy consumption. The energy generated is injected entirely into the electricity distribution network operated by Enedis, allowing the local energy mix as a whole to include a greater share of renewable energy.

### TECHNICAL FEATURES

At La Fleuriaye, the Linky smart meter helps raise awareness among inhabitants throughout the eco-district regarding energy control by displaying the district's energy consumption data on a central display. In addition, Enedis also plays a facilitating role in this type of «smart» project, as all the electricity flows through the network and is measured thanks to Linky.

With a combination of lifestyle, energy balance and cost control, La Fleuriaye Ouest is now a model that can be replicated.

**Group Activity:** Enedis is a public service provider and manages the French electricity distribution network. It develops, operates and modernises the electric grid and manages the associated data. It carries out customer connections, 24/7 troubleshooting, meter reading and all technical interventions. Acting on behalf of the local authorities which own the electricity networks, it is independent of the energy suppliers responsible for marketing and managing electricity supply contracts.

**37,7 MILLION**
customers

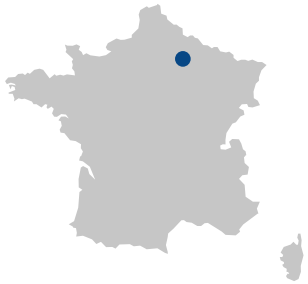
**332 OUT OF A TOTAL OF 365**
concession contracts renewed for an average period of 30 years, with energy unions, metropolitan and urban authorities, local authorities and Public Establishments for Intercommunal Cooperation (EPCI)

**98% OF PURCHASES**
by value are made with French companies

## KEY FIGURES 2022

| 38,000 | 800 | 15.3 | 95% | 25 |
|---|---|---|---|---|
| employees | sites throughout France | billion in 2021 (turnover) | presence on French territory | Regional Divisions |

# EXPRESS SUBSTATION MONT-PINSON



## A new industrial standard for the green transition in France

**This industrial innovation is illustrated by the project carried out in Mont-Pinson. This is a new installation, which reduces construction time thanks to two main principles: modularity and standardisation.**

The Express Substation is designed as a modular system made up of different blocks that can be built, assembled and tested in parallel with heavy civil engineering and earthmoving operations on site. Many operations are standardised, especially in terms of quality control and process rationalisation, to speed up the construction of the substations without impacting the final quality of the project.

This technological and environmental innovation was born from a desire to accelerate the construction processes of this type of facility in order to integrate renewable energies more quickly into electricity production.
Enabling a faster connection between generators and consumers, the role of the substation is to transform electricity to a level of voltage appropriate to the needs of users. It forms a key node in the electrical system that distributes power to territorial economic zones and connects them to one another.
Thanks to the Express Substation, Enedis is able to halve construction time (one year compared to two in general) and to respond more quickly to producers' requests for connection to the grid.

**35 additional Express Substations will be deployed by 2030.**

### TECHNICAL FEATURES

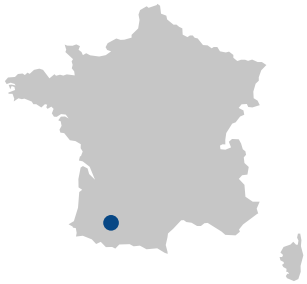
The substation includes transformers, monitoring, protection and remote-control equipment, energy metering equipment, and even emergency and preventive automatic cut-off systems contributing to the safety of the electrical system.
The substation is an electrical facility connecting the public electricity transport network (RTE) to the public electricity distribution network (Enedis). Genuine "pivotal points" in the electricity networks, substations are key to ensuring a better quality of electricity supply. These electrical facilities are essential to the overall electrical system, maintaining and supporting the electricity needs of a geographical area, particularly in rural areas.

Ardennes
France

Commissioned in July 2020

Duration of construction works reduced by half (1 year instead of 2)

# BIOMETHANE AND E-METHANE FROM SEWAGE SLUDGE IN PAU



## Valorisation of biogenic $CO_2$ from anaerobic digestion for injection to gas network

**The « Pau Béarn Pyrénées » community, along with SUEZ, Storengy, Egis, SOGEA/Vinci and the Cabinet Camborde Architectes, is the first local authority to commit to experiment 100% recovery of biogenic $CO_2$. After anaerobic digestion of wastewater treatment plant sludge, $CO_2$ is recovered as a by-product of biogas treatment.**

This innovative project of $CO_2$ conversion into e-methane consists in coupling water electrolysis and catalytic methanation. The proximity with the anaerobic digestion unit offers many synergies :

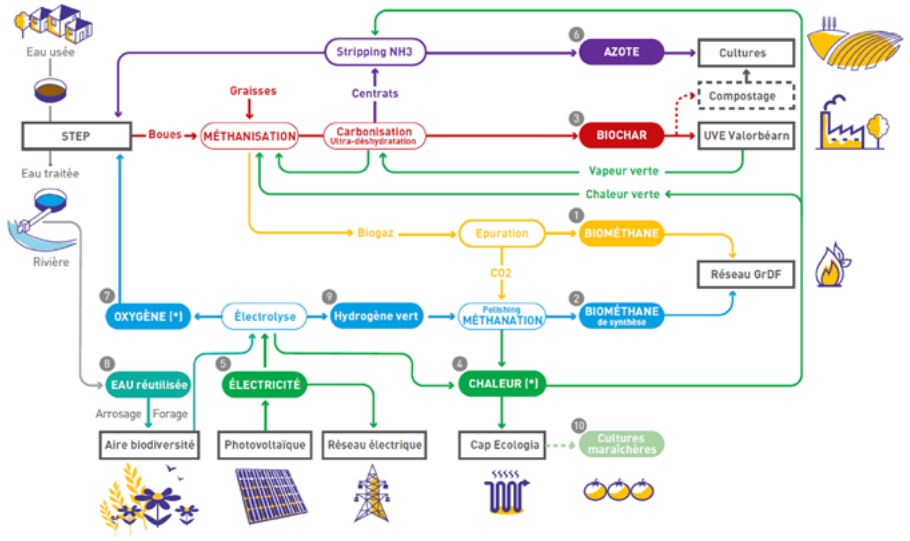
- local production of solar electricity to power the electrolysis ;
- combination of biogenic $CO_2$ flow with hydrogen (methanation process) to produce synthetic methane, also called e-methane ;
- oxygen produced by the electrolyser, is injected in biological basins boosting the wastewater treatment process ;
- heat recovery from the methanation process to keep anaerobic digestion warm and for sludge drying ;
- combined injection of biomethane and e-methane into the gas network.

In addition, the by-products valorisation also extends to the sludge (hydrothermal carbonisation for composting or combustion ; nitrogen recovery)

This innovative project is in line with :

- the local authority's Climate Action Plan, which aims to double its renewable energy production capacity and reduce emissions by nearly 30% ;
- the regulatory sandbox of the French Energy regulation commission (CRE) - a derogation introduced by the 2019 energy-climate law. This system allows the injection of new green gases into existing gas infrastructures with an experimental framework, thus ensuring the feasibility of the processes and extension to other territories.
- A call for project « power-to-methane » launched by GRDF in 2020 with the objective of catalyzing the development of the e-methane sector. The Pau Lescar project was selected among the three winners, thanks to its strong potential for replication.

At the heart of Pau's wastewater treatment complex, Cap Ecologia, this project is a true concentrate of circular economy and ensures a further step in the decarbonization of gas.




### TECHNICAL CHARACTERISTICS

Annual production of e-methane = 3,6 GWh/year
Total annual production of biomethane and e-methane = 10,5 GWh/year
Emissions avoided : 2300 $tCO_2$/year compared to the current reference unit

Lescar (64)
France

M€23.5 HT for anaerobic digestion
M€9.5 HT for methanation

1st semester 2024

15 years (operating contract by SUEZ)

3 direct permanent jobs

# GRDF EMPLOYEES ARE PROUD TO USE BIO-CNG/CNG AS INTERNAL SOURCE OF ENERGY TO FUEL THEIR VEHICLES

## A sustainable long term solution to enhance the decarbonisation of GRDF transportation


**The main public service mission of GRDF is to promote the bio-CNG/CNG among users of merchandises and passagers carriers alike.**

The GRDF employee fleet represents about 6400 vehicles (light duty and commercial). Therefore it was crucial to set an exemple and to anticipate its renewal (from the smaller unit VW Polo to the commercial Fiat Ducato). GRDF encourages its staff to fill up vehicle tank in local gas stations near their own sites. However, if such supporting infrastructures were unavailable, GRDF prides to invest in exclusive bio-CNG/CNG filling stations on sites.

In order to help covering the network of local gas stations, GRDF has decided to experiment the opening of their own exclusive gas stations to local communities.

By 2026, GRDF is aiming at reaching 100% of clean vehicles complying with low emission zones.

With less than 80% of greenhouse gas emission, very low levels of toxic polluants and reduced noise hazard compared to a diesel vehicle, the bio-CNG offers undeniable strengths in combating global warming and improving overall living standards.

### TECHNICAL CHARACTERISTICS

By the end of August 2022, **29% of the 6'400 GRDF vehicles are using bio-CNG/CNG** representing approximately 1'900 light duty and commercial vehicles.

Furthemore, in France there are about 200 local gas stations and 300 private stations, both delivering bio-CNG/CNG.

As of 25/08/2022, **a total of 17 stations were connected and providing bio-CNG/CNG** on specified technical GRDF sites for an initial goal of 24 stations by 2024.

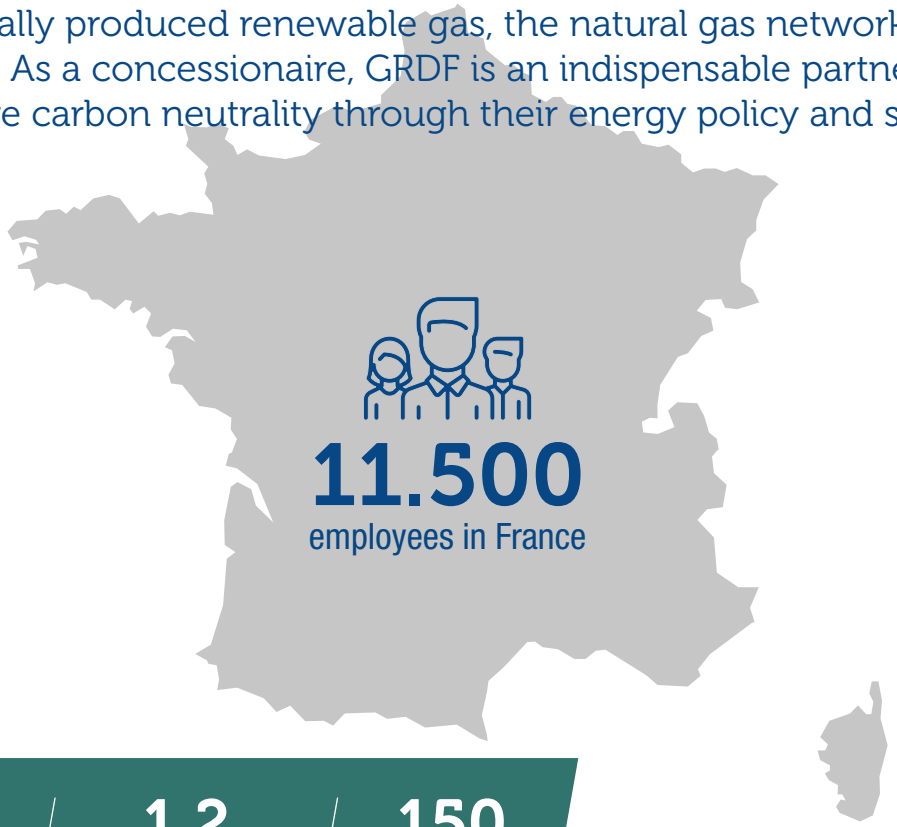
JE ROULE AU GAZ VERT

France | From 2021 to 2026 | 5 years | 11.000 employees

# GRDF IN FRANCE

**Group activities :** GRDF is the main gas distribution system operator in France, distributing natural gas to more than 11 million customers every day for heating, cooking, mobility and industrial processes, no matter who the supplier is. To this end, and in accordance with its public service obligations, GRDF designs, builds, operates and maintains Europe's largest distribution network (more than 202,000 km) across more than 9,500 municipalities, while guaranteeing the safety of people and property, and ensuring the quality of delivery.

With the current rise of green gas, a locally produced renewable gas, the natural gas network is an essential component of the ecological transition. As a concessionaire, GRDF is an indispensable partner for regional and local authorities in helping them achieve carbon neutrality through their energy policy and sustainable mobility choices.



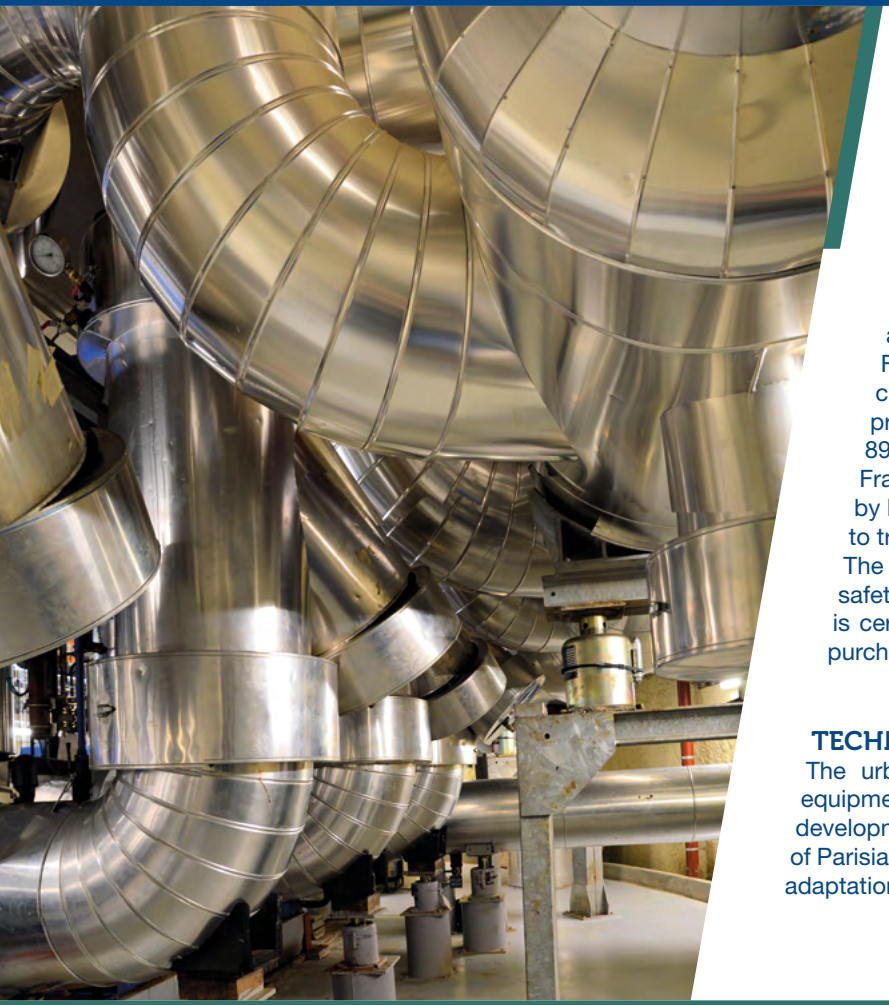

## KEY FIGURES 2022

| 1 | 1 | 3.5 | 1.2 | 150 |
|---|---|---|---|---|
| countrie | continent | billion euros turnover in 2021 | billion euros investmens in 2021 | industrial sites |

# THE HIGHLY ENERGY-EFFICIENT DISTRICT COLD NETWORK OF THE CITY OF PARIS

FRAÎCHEUR DE PARIS

## Fraîcheur de Paris, European leader in urban cold and sustainable cooling



## MUNICIPAL CONTRACT FOR THE PRODUCTION AND DISTRIBUTION OF COOLING ENERGY

**Develop a highly energy efficiency urban cold network for the City of Paris, produce and distribute cooling energy.**

Fraîcheur de Paris, a consignee in the City of Paris, develops and operates the largest cooling system, the first in Europe and the 11th in the world, by integrating ambitious objectives to support the City in its efforts to decarbonize and adjust to climate change.

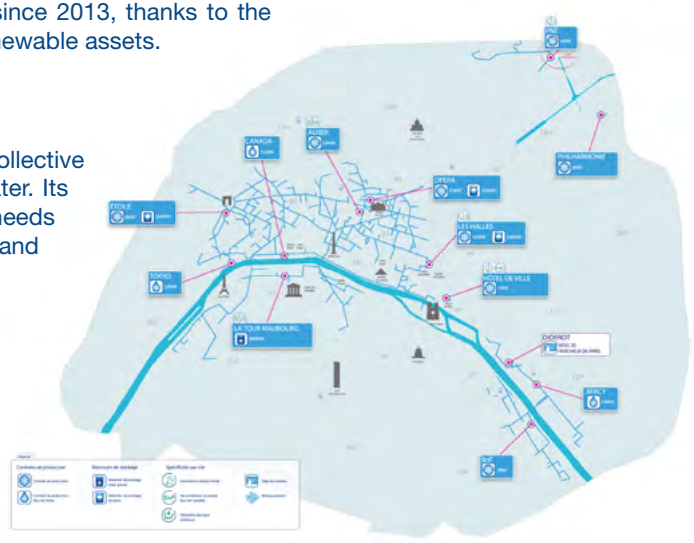
Fraîcheur de Paris mainly meets the cooling needs of offices, hotels, department stores, and museums in the capital city, and is expanding its activities to new types of customers such as hospitals, schools, and nursing homes. 10 production sites and 4 storage sites provides nearly 400 gigawatts per year of cooling to more than 730 buildings via 89 km of network.

Fraîcheur de Paris is the successor to CLIMESPACE, an ENGIE subsidiary and consignee since 1991. It is jointly owned by ENGIE (85%) and RATP Group (15%). With 30 years of experience, it offers a sustainable and competitive alternative to traditional cooling solutions.

The concessionaire of the public refreshment service is certified ISO 50001 (energy efficiency), ISO 45001 (health and safety) and ISO 14001 (environmental management). The cooling utility is carbon neutral 2018 and the cooling network is certified 100% Renewable and Recoverable Energy since 2013, thanks to the purchase of guaranteed origin electricity from existing renewable assets.

### TECHNICAL SPECIFICATIONS

The urban network of the City of Paris consists of collective equipment for the production and distribution of chilled water. Its development is based on the mutualization of the cooling needs of Parisian buildings. It is an essential tool in the fight against and adaptation to climate change.



Paris France

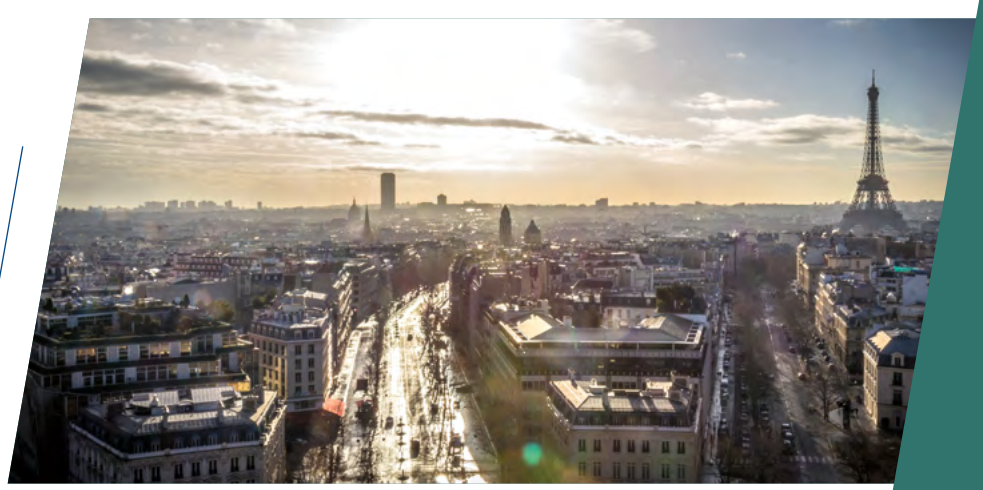
20 years

160 employees

**Group activities:** production, transport, stockage et distribution d'énergie frigorifique.

**Fraîcheur de Paris develops the urban cold network. Today, it is more than 89 km long and provides cooling to more than 740 customers.**

## Fraîcheur de Paris is jointly owned by Engie (85%) and RATP Group (15%).

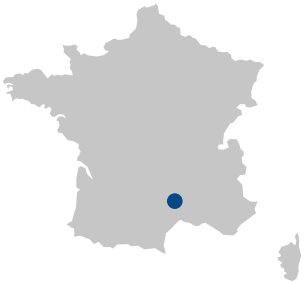


Fraîcheur de Paris integrates all the activities related to the operation and development of the network: feasibility studies in partnership with private and public players, systems engineering, construction of facilities, network operation and remote control, cold distribution, purchase of electricity, maintenance, consulting.

### KEY FIGURES 2021

| 92.8 | 89 | 10 | 4 | 6 |
|---|---|---|---|---|
| million euros in revenues | km of underground network | production sites | energy storage sites | millions square meters of cooling in Paris |

# THE ENERGY ACCELERATION OF THE AGRICULTURAL COMMUNE OF CROS



greenyellow
SHIFT TO PROFITABLE ENERGY!

## The energy transition with and for rural areas

**GreenYellow supports Cros in this unique energy acceleration project.**

The city has entered into a unique partnership with GreenYellow to accelerate the energy transition in the area, for the benefit of an agricultural community of 171 inhabitants. A 1 Mega Watt power plant has been built and launched on an unused plot of land in the town, and will produce the equivalent of the annual consumption of 150 single-family homes.
This solar farm reinforces the role of rural areas in the energy transition by contributing to the creation of sustainable jobs and decarbonation. This achievement goes beyond the village of Cros since it is part of an energy transition mechanism with and for rural areas.

« It reinforces the role of rural areas in the energy transition by contributing to the creation of sustainable jobs and decarbonization. The solar farm also adds to the financial resources of the community of communes and Cros by supplementing their respective budgets. For Cros, this revenue encourages a budgetary focus on new energy transition projects of collective interest.»

### TECHNICAL CHARACTERISTICS

This large-scale project is a ground-based power plant with a power of 1 Mega Watt that will produce the equivalent of the consumption of 150 households and the consumption of 125,000 light bulbs (8W LED) per year. We call «ground power plant», panels placed directly on the natural ground, on south-facing structures.
The parcel on which the power plant is located is a former agricultural land progressively reinvested by vegetation. This type of project is subject to an environmental impact study to be sure that it will not damage the existing fauna and flora.

**Thanks to this initiative, this installation will avoid rejecting 55 tons of $CO_2$ into the atmosphere per year (that is as much as 22 round trips Paris/NYC by plane).**
**The solar farm will also add to the financial resources of the community of communes and Cros, supplementing their respective budgets.**

Cros
France

1 M€

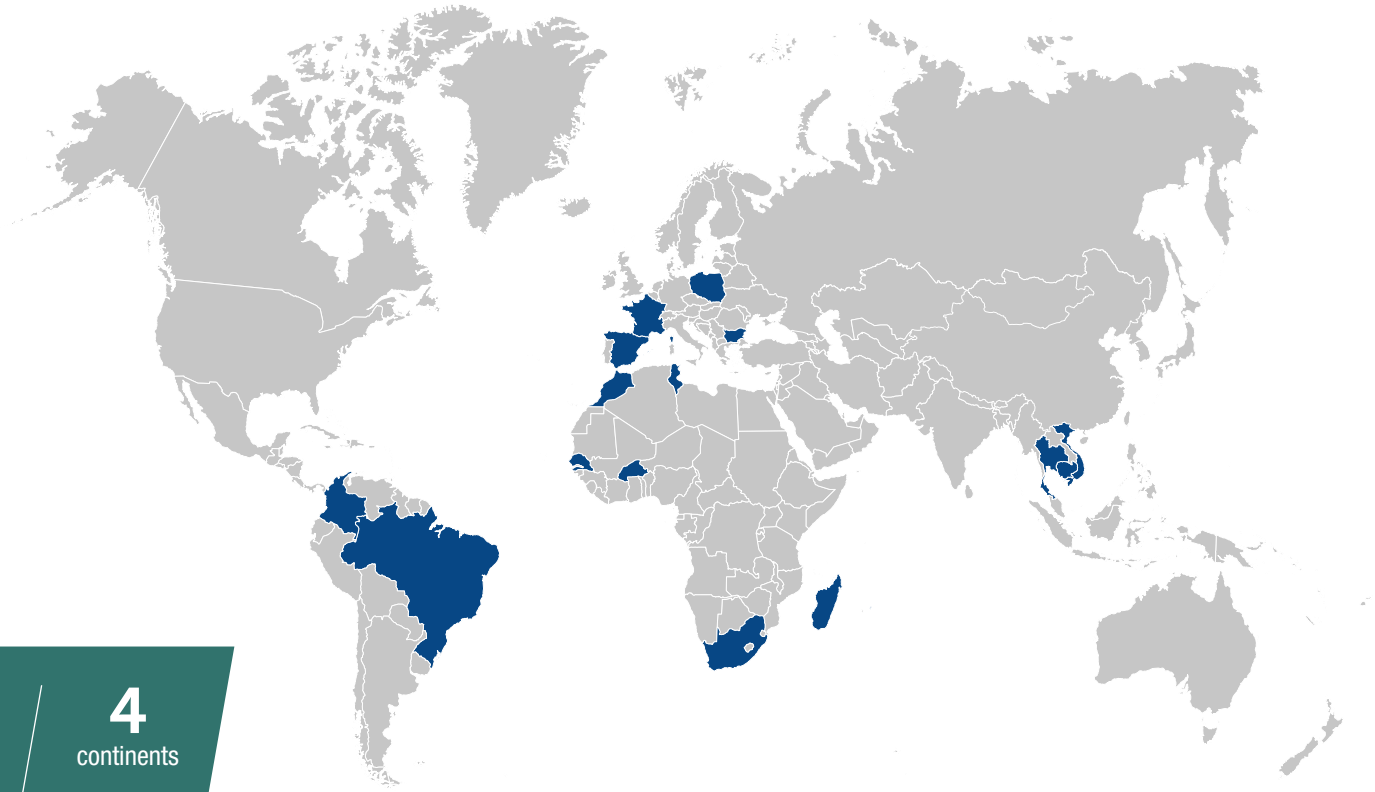
31 august 2021

5 years

Work with the municipal team, GreenYellow and the Arborescence capital Council

# GREENYELLOW IN THE WORLD

**Group activities:** Since 2007, GreenYellow has been offering unique solutions in the field of energy transition. As an expert in solar photovoltaic production, energy efficiency and energy services, GreenYellow is committed to the development of solutions aimed at reducing its customers' energy expenses by enabling them to consume less and better. In 15 years, more than 2,100,000 m² of solar photovoltaic panels have been installed generating approximately 740 MWp and 2,800 energy efficiency contracts are operated worldwide.



**KEY FIGURES 2022**

| 500 | 16 | 4 |
|---|---|---|
| employees worldwide | contries | continents |

# SOLARIZATION OF SAINT-ETIENNE METROPOLE

greenyellow
SHIFT TO PROFITABLE ENERGY!

## The ambition: a positive energy territory

**GreenYellow and its subsidiary Réservoir Sun have supported Saint-Etienne Métropole in this unprecedented project to solarize the territory's buildings, contributing to its energy autonomy by 2050.**

This project is in line with the city's desire to become a positive energy territory. It is not a one-off operation but a real political will to solarize the cities of the community and to work on a local scale. The project concerns all types of buildings: for example, the soccer stadium, the opera house, about thirty schools or the bus and tramway depot have been equipped with solar installations. In total, more than 150 buildings will be equipped. The energy produced can then be used directly by the buildings or fed back into the grid.

"*I am very proud to support Saint Etienne Métropole in this major project. For GreenYellow, it is the demonstration of our capacity to be a real partner of local authorities and public authorities in their energy transition, with solarization of course, but also energy efficiency. Saint-Etienne is a very special city for GreenYellow, the birthplace of the Casino group, and we are happy to continue this historical link by committing ourselves to this territory*", said Otmane Hajji, President of GreenYellow.

### TECHNICAL CHARACTERISTICS

This large-scale project will make use of unused space by solarizing the roofs and parking lot shades of more than 150 public buildings, offering a potential of 150,000 to 200,000 m² to be covered, or the equivalent of 20 to 27 soccer pitches. These 20 hectares of solar panels will allow Saint-Etienne Métropole to produce 33 GWh of electricity per year, which is the electricity consumption (excluding heating) of 12,000 households.

**Through this initiative, Saint-Etienne Métropole will avoid the emission of 15,000 tons of $CO_2$ each year.**

Saint-Etienne Métropole
France

20 M€

2022

Began
in 2019

Work with local VSEs/SMEs
(works + maintenance)

# COMPLETION OF FRANCE'S LONGEST LOCAL POWER LINE UNDERGROUNDING PROJECT AT MONTPELLIER

Le réseau de transport d'électricité

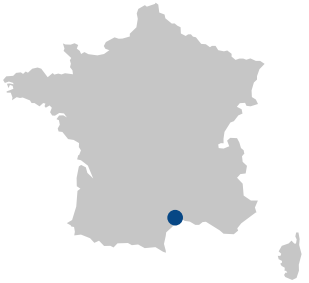
## Improving urban and environmental quality, and opening up new areas for economic development

**This large-scale project confirms RTE's commitment to working with and for local authorities. Opening up new areas for economic development enables the Montpellier Metropolitan Area authority to lay out new neighbourhoods for housing.**

The project, carried out under a local agreement between the City, the Metropolitan Area authority and RTE, began in 2018. The objective was to replace four overhead power lines with 12 kilometres of underground lines, in order to provide a better environment for local inhabitants and free up new areas for economic development in the locality.

### TECHNICAL CHARACTERISTICS

- Dismantling of two 63-kV and two 225-kV overhead lines,
- Prior undergrounding of 12 km of lines,
- Work carried out at night to minimise impact,
- Power supplies maintained by RTE throughout the project,
- 2.5 years of work in partnership with the Metropolitan Area authority.



Montpellier
France

Investment of €18.6 million (€13.6 million financed by the Montpellier Metropolitan Area authority and the City of Montpellier)

Removal of 13 kilometres of overhead power lines
36 pylons dismantled

# HAUTS-DE-FRANCE: AVELIN-GAVRELLE POWER LINE ENTERS SERVICE

Le réseau de transport d'électricité

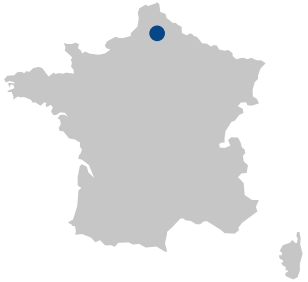
## New link secures power supplies for two million people in France

**On 16 December 2020, the second circuit of the 400-kV line between Avelin and Gavrelle, in the Hauts-de-France region, was placed into service. This achievement marked the completion of ten years of work by teams from RTE and lead contractor Eiffage. The new link ensures security of supply for almost two million people in France, and helps to boost the country's capacity for exchanges of electricity with its European neighbours.**

Originally constructed in 1963, the link previously had only a single circuit, unlike every other power line in the north of France. This meant that it regularly reached capacity, leading to a risk of power cuts. In 2011, therefore, RTE began rebuilding the link, not only to ensure security of electricity supply for the region's inhabitants and businesses, but also to accommodate increasing local renewable energy generating capacity. In total, more than 530 communes, representing over 1.7 million inhabitants as well as 220,000 industrial and service-sector jobs, are supplied by the Avelin-Gavrelle power line.

### TECHNICAL CHARACTERISTICS

With benefits totalling around €80 million, the project – which received a "declaration of public interest" in December 2016 – has helped to boost economic growth in the Hauts-de-France region. RTE has shown its commitment to supporting the area throughout the project, via a project support plan, the use of local companies, financial support for "citizen projects" in favour of sustainable development, 30,000 hours dedicated to helping support local people into employment, etc. Together with Eiffage Énergie Systèmes, one of the main contractors on the project, RTE also offered training in very-high-voltage line installation under a vocational training scheme aimed at unemployed young people, leading to several trainees being hired on permanent contracts.

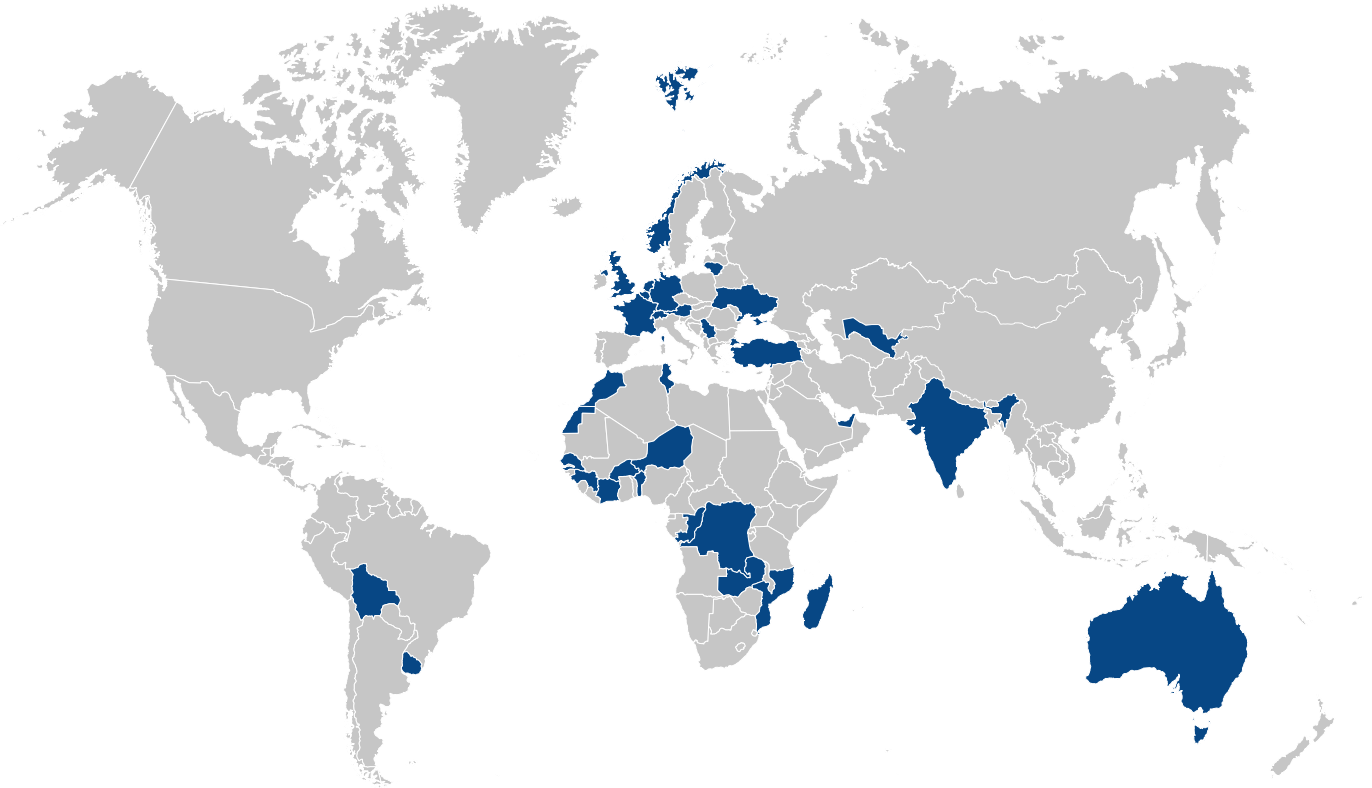


Hauts-de-France
France

436 pylons and poles dismantled / 55 km of power lines buried / 30 km of power links upgraded / 78 new pylons, including 45 "Equilibre" pylons specially designed to ensure that RTE's infrastructure blends more effectively into the landscape

# RTE IN THE WORLD

**Group activity:** RTE is in charge of the public power-transmission system supplying electricity to mainland continental France. RTE works every second of every day to ensure sustainable access to low-carbon electricity.



## KEY FIGURES 2022

| 9,438 | 5.254 | 2,818 | 105,970 | 51 |
|---|---|---|---|---|
| employees around the world | M€ revenues | active RTE substations | km of power lines | cross-border connections |

# FRANCE'S FIRST OFFSHORE WIND POWER GENERATION SCHEME AT SAINT-NAZAIRE

Le réseau de transport d'électricité

## A key milestone in the energy transition

**The Saint-Nazaire wind farm has become the first scheme to deliver offshore wind power in France. Production will gradually increase as more turbines are brought into service.**

RTE is responsible for transmitting the power generated by all of France's offshore wind farms to the land-based grid. The country currently has a total of 17 projects located around all of its coasts, with a total capacity of over 10 GW, representing an investment of around €8 billion.

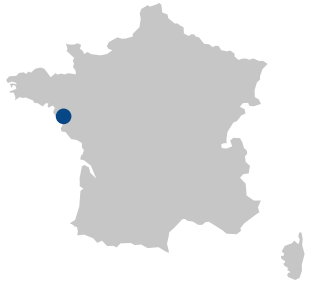
As we stressed in our report, Energy pathways to 2050, achieving carbon neutrality is not possible without significant growth in renewable energies, including marine renewables.

This latest achievement is therefore a key milestone.

### TECHNICAL CHARACTERISTICS

Since the installation of the first wind turbines in the Saint Nazaire wind farm off the French coast at Guérande in mid-April, a total of 27 turbines have been erected offshore.

RTE's teams have been connecting the wind farm to the national electricity grid. Offshore installation of the 80 turbines in the wind farm (which is jointly owned by EDF Renewables and EIH S.à r.l., a subsidiary of Enbridge Inc. and CPP Investments) should be completed by the end of 2022, boosting the scheme's total capacity to 480 MW, sufficient to meet the annual household consumption needs of 700,000 people.



Saint-Nazaire
France

Electrical connection of 80
wind turbines installed in 2022

480 MW of generating capacity

# TRANSMISSION SYSTEM UPGRADE TO MEET REGIONAL NEEDS AND SUPPORT THE ENERGY TRANSITION

Le réseau de transport d'électricité

## The grid upgrade programme in the Haute-Durance area foreshadows the challenges facing the electricity grid of tomorrow

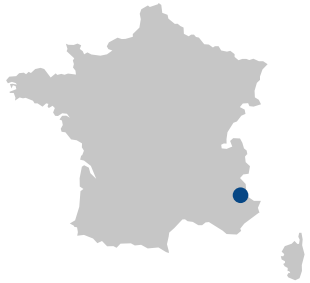
**The grid upgrade programme in the Haute-Durance area foreshadows the challenges facing the electricity grid of tomorrow. It is emblematic of the network upgrade approach adopted by RTE in partnership with regional and local authorities.**

The placement into service of the Pralong substation in 2021 marked the completion of the new structures built under the Haute Durance electricity transmission grid upgrade programme. This flagship project for the Hautes-Alpes department has secured the electricity supply for the local area, while at the same time enhancing the way RTE's grid structures blend into the landscape. It has contributed to the local economy, thanks to the involvement or more than 150 companies, and supported France's energy transition by boosting grid performance.

### TECHNICAL CHARACTERISTICS

A total of 200 km of lines have been upgraded, securing the electricity supply for the Hautes-Alpes department. Half of the upgraded lines have been laid underground, the other half reconstructed as overhead lines away from homes and facilities. By the end of 2022, the number of pylons will have been cut almost in half, from 690 to 353.

RTE has undertaken a number of initiatives in favour of biodiversity within the scope of the programme, such as the creation of eco-corridors with a total area of around 10 hectares underneath the overhead lines. More than 150 local companies were used as subcontractors. The project generated economic benefits worth €49 million for the local area, well in excess of the predicted total of €30 million. The work also involved the installation of 200 kilometres of fibre-optic cable to expand the broadband network in the Hautes-Alpes. This important move is helping to bridge the digital divide in France. Finally, as part of a "Project Support Plan", RTE has co-funded more than 50 local projects, providing further support for the area and its inhabitants.



Haute-Durance
France

200 km of power lines upgraded
Number of pylons halved

12,000 trees replanted

# BRAZIL: RENEWABLE ELECTRICITY FROM BIOGAS STEMED FROM ORGANIC WASTE

## A renewable energy that impacts climate change

© Médiathèque Veolia - Christophe Majani D'Inguimbert

**In the frame of a circular economy approach and to help fight climate change, Veolia is committed to maximizing the energy recovery from biogas with three new power plants, installed at its waste management sites in the states of Sao Paulo and Santa Catarina.**

They are generating a total of 12.4 MW of renewable electricity from the biogas produced by the decomposition of organic waste, equivalent to the electricity needs of a city of about 42,000 inhabitants in Brazil.

Biogas is generated from organic waste of urban or industrial origin. This is a stable and predictable source of energy, more environmentally friendly than fossil fuels to produce electricity. Its energy recovery closes the local loop of the circular economy and contributes significantly to climate change mitigation:

- It reduces greenhouse gas emissions of the landfills by destroying the methane generated by waste, whose environmental impact is 28 times higher than that of $CO_2$;
- Renewable electricity produced on site helps in the effort to advance in the decarbonization of the country's energy matrix while responding to the clean energy demand, to replace fossil fuels.

Capturing biogas and valorizing at Veolia's landfill gas-to-energy facilities in Brazil will prevent 20,093 tons of methane from being emitted into the atmosphere, meaning over 562,000 tons of $CO_2$ equivalent per year. Adding this to other capturing projects, the landfill operations in Brazil are avoiding the emissions of 1.46 million metric tons of $CO_2$ equivalent in 2022.

Veolia is also studying other biogas recovery and valorization solutions in the country, in particular the production of biomethane for use in the natural gas network or as an automobile fuel, among other opportunities.

Brazil

42,000 inhabitants supplied with electricity

562,000 tons of $CO_2$ equivalent emissions less

12.4 MW of renewable electricity

# THE LARGEST ENERGY PERFORMANCE CONTRACT IN IRISH HEALTHCARE

VEOLIA

## Energy saving, carbon footprint decrease, reduced dependence on the electrical grid

### ST JAMES' HOSPITAL - DUBLIN, IRLAND

**Veolia* installed and operates energy efficient equipment at St James' Hospital in Dublin. This energy performance contract (EPC) is the largest of its kind in the Irish healthcare sector.**

The hospital's new energy center features a 2 MWe combined heat and power plant that produces approximately 13 GWh/year of low carbon electricity.

To maximize heat efficiency, with a total of 7.5 MWth, new hot water and steam boilers, and clean steam generators will meet the demand for hot water, steam and sterilization. A new campus-wide centralized building management and monitoring system optimizes energy efficiency across all of the buildings.

Other upgrades include the installation of energy-efficient LED lighting across the campus, new air handling units for the theater, and air conditioning.

The energy-saving measures are guaranteed by Veolia, which also provides a comprehensive maintenance service for the duration of the 20-year contract.

** in partnership with the Carbon and Energy Fund Ireland (CEFI)*

Irland
Dublin

$CO_2$ emissions reduced by 118,380 tonnes

€26 million in guaranteed energy and operational savings

Cutting electrical consumption by 26% per year

# PRAGUE: MANAGEMENT OF DISTRICT HEATING NETWORKS, RIGHT AND LEFT BANK

VEOLIA

## Reliability and know-how at the service of the city and the climate

© Médiathèque Veolia - Christophe Majani D'Inguimbert

### VEOLIA CURRENTLY OPERATES THE LARGEST HEATING NETWORK IN THE CZECH REPUBLIC

The Prague Left Bank urban heating network includes two thermal energy production plants: Veleslavin, with a capacity of 132 MWth and Juliska, with a capacity of 49 MWth. They supply 23 gas-fired heating plants with an installed capacity of 317 MWth. Veolia also operates 8 cogeneration plants with installed capacity of 6.2 MWe.

By operating these heating networks, Veolia supplies 55,000 housing units as well as municipal and service buildings.

The heating network on the Right Bank of the Vltava River in Prague extends over 550 kilometers and serves 235,000 homes, as well as municipal facilities and commercial premises.

Veolia is present in several major cities in the Czech Republic such as Ostrava, Frýdek-Místek, Olomouc, Přerov, Nový Jičín, Krnov, Kolín, Vlašim or Mariánské Lázně. The Group also provides energy services to 225 industrial customers as well as energy services to buildings.

Prague
Czech Republic

290,000 homes, municipal facilities and commercial premises served

Commissioning: 2016 (left bank), 2020 (right bank)

A 660 km network

# UDINE, ITALY: THE HOSPITAL'S HEATING NETWORK ALSO SUPPLIES PART OF THE CITY'S HEATING NETWORK

VEOLIA

## Using a hospital heating facility as a producer of thermal and electrical energy

© Médiathèque Veolia

**In 2006, Veolia, through its subsidiary Siram, was awarded a contract to design, build and manage for 35 years a new hospital technology center that will also supply the district heating network in the northwestern part of the city of Udine.**

This was the first solution in Italy using a hospital heating plant as the hub for the continuous production of thermal and electrical energy for an entire urban area.

The objective of the operation was to carry out the required work with the best available technologies using renewable or similar energy sources, such as cogeneration of electricity, heat and cold, aiming to control overall energy consumption and reduce polluting emissions.

### TECHNICAL CHARACTERISTICS

The new technological plant produces a total power of:
- 86.6 MWt thermal power
- 10.3 MWe electrical power
- 25.6 MWf refrigeration power

The new plant in addition of covering the electrical energy, heating, refrigeration and hot water for the hospital(1.036 beds) supplies with hot water and heating about 94 private/public buildings:
- 20 schools/universities for 20.000 students
- 10 sport and cultural centers
- 2.000 residential properties

Udine Italy

15% less primary energy use (natural gas)

30% less greenhouse gas emissions (-5,630 t/year)

11 kilometers of heating network

30 employees

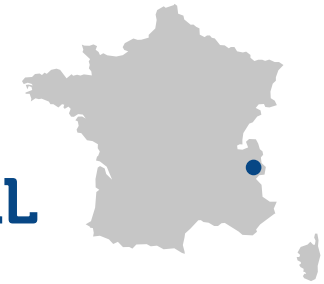
35 years

# FINANCING INFRASTRUCTURES AND RELATED PUBLIC SERVICES

Institut de la gestion déléguée

PROOF BY EXAMPLE

# THE MER DE GLACE SITE ON THE GREEN PATH TO RENEWAL



BANQUE des TERRITOIRES | Caisse des Dépôts Groupe

## Concession contract of public service for the renovation and operation of the site of the Mer de Glace

**The City of Chamonix has launched a public service delegation to revitalize and operate the Montenvers site, which was in decline: 350,000 visitors are welcomed each year, 100,000 less than in the 1990s.**

The Compagny of “Mer de Glace” formed between Compagny du Mont Blanc (60%), Caisse des Dépôts (30%) and Crédit Agricole (10%) won the public service delegation contract which took effect on July 1, 2021 for a period of 33 years old. Entrusted to the architects Fabre/Speller and the Tempora agency, who have already worked for instance on the Chauvet cave, the program involves the demolition and reconstruction of the telecabin, which will allow visitors to directly access the Mer de Glace, whereas today you have to take stairs to reach the glacier which withdraws inexorably.

Its departure station will be installed out of sight under the newbuilt panoramic terrace. This cable car will be linked by a footbridge to the future International Center for Glaciers and Climate. Unique in the world, this centre, which will succeed the current glaciorium, will invite you to an immersive experience around glaciers and their history. It will enhance the memory of a major site in the history of the high mountains while informing and raising awareness about climate change.

### TECHNICAL CHARACTERISTICS

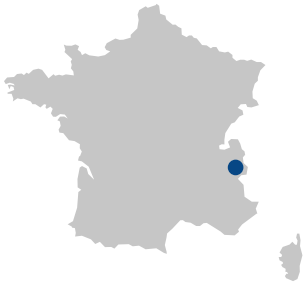
The new 581 m long telecabin with 203 m drop will have 16 cabins with a capacity of 10 people, it will have a remote avalanche triggering system.

### ENVIRONMENTAL PERFORMANCE

- Work carried out at altitude under strong climatic and environmental constraints.
- Included in a Grand National Site, the project is designed with the aim of limiting its visual and ecological impact both during construction and operation.

Chamonix France | €53m | July 2021 | 33 years | 2 employees

# THE MONT BLANC TRAMWAY GETS A MAKEOVER



BANQUE des TERRITOIRES | Caisse des Dépôts Groupe

## Public service concession contract for the renovation and the operation of the Mont Blanc Tranway


**The Mont-Blanc Tramway has been a leading tourist attraction since its construction at the beginning of the 20th century. This train, the highest in France, crosses all the alpine levels from the urbanized valley to the the high mountains and gives access to the busiest classic route for the ascent of Mont-Blanc.**

110 years after the beginning of the operation of this legendary train, the ambition of the project is to give a new “breathe” to this facility. The use of the Tranway has tended to stagnate for several years. The renewal of the concession contract is an opportunity to carry out an ambitious investment program intended to renovate and modernize the tourist offer to revitalize the attractiveness of the site. This program, subsidized by the Haute Savoie department within the limit of a maximum envelope of €70 million, includes in particular the acquisition of four new trains and the renovation of the stations.

The Compagny Tramway du Mont Blanc, formed between the Compagny du Mont Blanc (80%) and the Caisse des Dépôts (20%) is responsible for the public service delegation contract which took effect on June 1, 2020 for a period of 15 years.

### TECHNICAL CHARACTERISTICS

- Route length: 13 km
- Number of stations: 4
- Altitude at the point of arrival: 2372m
- Average number of visitors per year: 150,000

### ENVIRONMENTAL PERFORMANCE

- Work carried out at altitude under strong climatic and environmental constraints.
- Located in a Grand National Site, the project is designed with the aim of limiting its visual and ecological impact both during construction and operation.

Saint-Gervais France | 70 M€ | June 2020 | 15 years | 15 employees

# BANQUE DES TERRITOIRES IN FRANCE

**Group activities :** Created in 2018, Banque des Territoires is one of the five business lines of Caisse des Dépôts. It brings together in a single structure the internal expertise for the territories.

As a single point of entry for customers, it offers tailored advisory and financing solutions for loans and investments to meet the needs of local authorities, social housing bodies, local public companies and the legal professions.

It is aimed at all regions, from rural areas to metropolitan areas, with the ambition of fighting against social inequalities and territorial divides.

Banque des Territoires is deployed in the 16 regional divisions and 37 territorial offices of Caisse des Dépôts in order to be better identified with its clients and to be as close as possible to them.

**KEY FIGURES 2020**

| | | | |
|---|---|---|---|
| **€ 3.8** million invested in 800 projects since 2018 (excluding subsidiaries) | **€ 58** billion injected into territories since 2018 | **€ 40** billion in loans to local authorities and social housing organizations | **€ 9.6** billion injected into recovery since 2020 |

# VILAGIL PROJECT

BANQUE des TERRITOIRES | Caisse des Dépôts

## Deployment of a charging infrastructure for Electric Vehicles (IRVE) in Toulouse Metropole


© So Dupontrenoux

The project aims to deploy 67 charging stations for electric vehicles on the territory of Toulouse Métropole. It follows a Call for Expression of Interest launched by Toulouse Métropole, and aims to quadruple the on-street charging offer on the territory of the Métropole, with an emphasis on ultra-fast charging, which will enable Toulouse to become the first French metropolis to acquire such an ultra-fast charging capacity (charging time < 10 minutes). The project allows to support the development of electric vehicles, to adapt to the new present and future behaviours to strengthen access to mobility, while decarbonizing it and making Toulouse a technological showcase for mobility of the future.

The project is carried by Bouygyes Energies & Service (BYES), at 51%, in partnership with the Future Investment Program (PIA) at 24.5% and the Banque des Territoires of the Caisse des dépôts, at 24, 5% as well. A ten-year Territorial Occupation Agreement has been signed with Toulouse Métropole. The project is currently in an advanced deployment phase, with full commissioning scheduled for summer 2022.

### TECHNICAL CHARACTERISTICS

The 67 stations include a total of 288 charging points out of which 230 normal charging points (20 kW), 30 fast charging points (100 kW), 8 ultra-fast charging points (150 kW) and 20 charging points dedicated to the 2 electric wheels. The installation, maintenance and operation of the stations is entrusted to BYES.

### COMMISSIONING CONSTRAINTS

The deployment schedule is on track, with the launch of the service and the first deployments in November 2021, with full commissioning scheduled for the end of the summer 2022.

### ENVIRONMENTAL PERFORMANCE

The project saves 52,000 tonnes $CO_2$ equivalent over the ten-year duration of the project. It comes with a guaranteed 100% renewable electricity supply.

Toulouse France | 5 M€ | Summer 2022 | 10 years | Creation of 3 to 4 direct jobs within the framework of the project*

** In the construction phase, 10 BYES employees will be directly involved in the terminal installations and 6 to 7 in the operating phase. BYES will rely on local labor from its works center in Montrabé (31) and its expert IRVE teams based in Saint-Jean (31).*

# BAIXO ALENTEJO HIGHWAY - SPER

VAUBAN INFRASTRUCTURE PARTNERS

## SPER SA and Planestrada SA, companies managing the concession contract for operating the IP-2 shadow toll highway in Baixo Alentejo, Portugal

**In July 2021, Vauban Infrastructure Partners acquired a 100% stake in SPER – Sociedade Portuguesa para a Construção e Exploração Rodoviária, SA and Planestrada – Operação e Manutenção Rodoviária, through Vauban's CIF III Fund.**

SPER is a Portuguese road concession company that manages a fully operational toll-free road network (IP2) in Baixo Alentejo of c. 113km, which provides connectivity between Ourique, Beja and Evora (ending c. 20km from the latter).

PLANESTRADA is the operation and maintenance (O&M) company in charge of all of the operational activities of the concession assets, including technical assistance, maintenance activities, managing traffic counting systems and other auxiliary systems.

Through this acquisition, Vauban has strengthened its investment in the mobility sector in Portugal, and its commitment to maximizing its impact in the region & creating sustainable value for all stakeholders over the long-term.

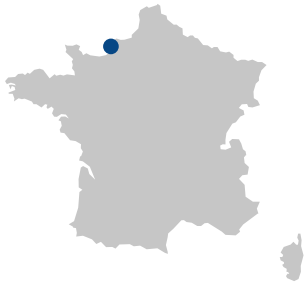
### TECHNICAL CHARACTERISTICS

The project is regulated by a concession agreement between SPER and Infraestruturas de Portugal, and consists of an initial redevelopment of a 113km shadow toll road along with the associated O&M activities (traffic count, security, ordinary maintenance, heavy maintenance and renewal, patrolling, etc.). The concession agreement was signed in January 2009, construction was completed in October 2016, and operation will last until 2039.

This project provides essential mobility services to local communities and strengthens the local economy. The company is carefully monitoring its environmental impact through top-of-the-art processes that review air quality, noise emission, water quality, and habitats.

Baixo Alentejo Province Portugal | c.400M EUROS | July 2021 | 30 years | 29 employees

# BioSynErgy



VAUBAN INFRASTRUCTURE PARTNERS

## Design, construction and operation of a mixed combustion plant

**The BioSynErgy project, led by SUEZ and Vauban Infrastructure Partners through Vauban's BTP Impact Local Fund, consists of the design, construction, and operation of a mixed combustion plant equipped with a biomass boiler with a capacity of 43.5 MW PCI, whose purpose will be to produce energy by valorizing wood waste and Solid Recovered Fuel (SRF).**

The BioSynErgy power plant will be built in the heart of the Le Havre ZIP, in France. The entire area is owned and managed by the Grand Port Maritime du Havre. The latter has signed a temporary occupation permit for BioSynErgy for a period of 42 years in exchange for an annual fee.

The plant is expected to provide hot water to the urban heating network of the city of Le Havre, and steam to industrial companies nearby the plant within the ZIP. More than 300,000 MWh will be consumed annually by the urban heating network (covering c.24,000 households) and local industrial companies (Yara, Chevron, Safran).

The supply of the plant will be based on a biomass and SRF preparation unit currently being developed on a brownfield site rehabilitated by Suez.

Supported by ADEME and the Normandie region, BioSynErgy is an innovative project that respects the environment and generates economic activity, in line with the region's development policies. As such, it fits perfectly the industrial ecology approach initiated in the Le Havre area.

### TECHNICAL CHARACTERISTICS

The newly built power plant, with a production capacity of 43.5 MW, will offer an alternative energy source that will be more environmentally friendly and that will improve the local $CO_2$ footprint.

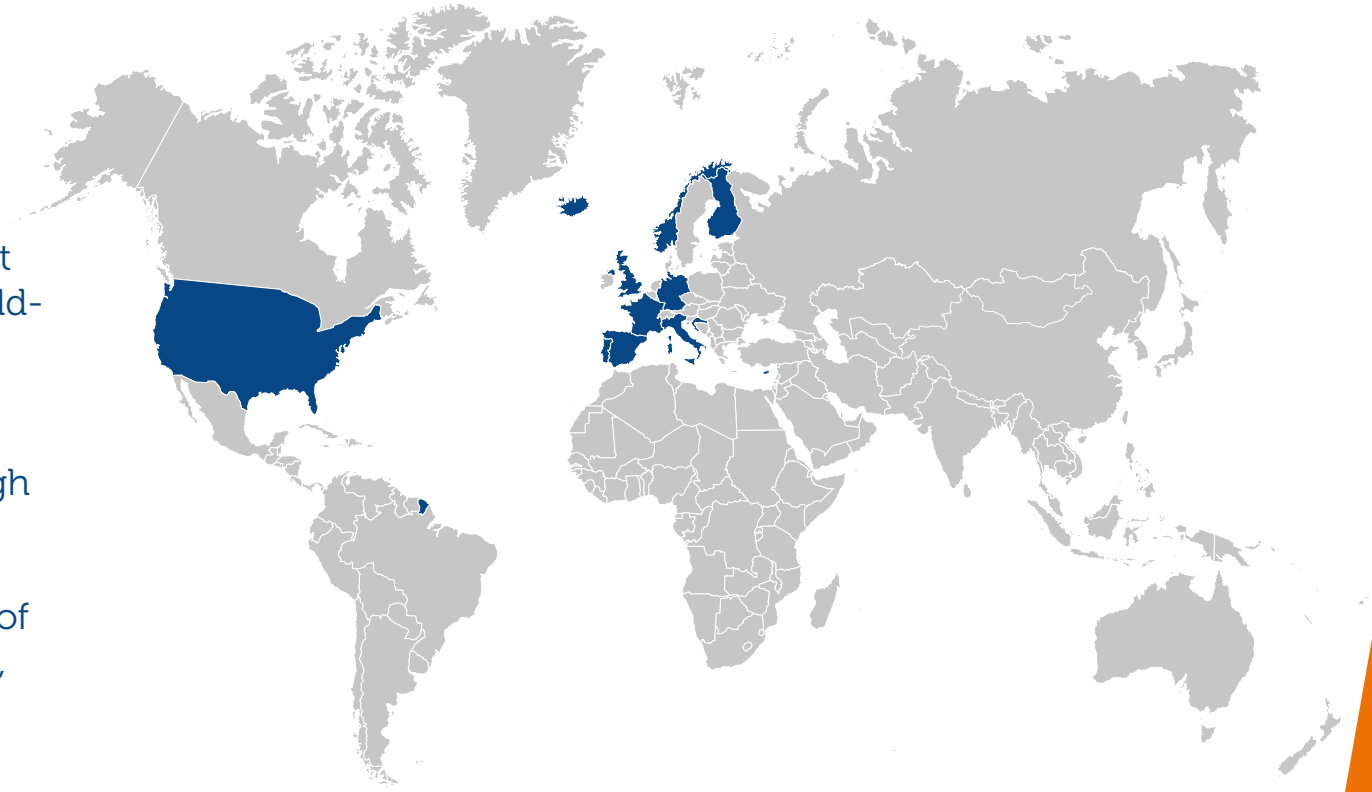
**The supply plan is based on the following material mix:**

- biomass mainly from end-of-life wood and waste wood (B-wood),
- solid recovered fuel (SRF) prepared from non-hazardous waste as a complement,
- pulper rejects from the paper industry.

Le Havre France | 80M EUROS of investment from Suez and Vauban, supported by public subsidies from ADEME and the Normandie region | July 2021 | 42 years | 45 employees

# VAUBAN INFRASTRUCTURE PARTNERS IN THE WORD

**Group activities:** Vauban Infrastructure Partners is a leading Infrastructure Asset Manager focused on European core infrastructure investments. Vauban targets predominantly European brownfield midmarket assets pursuing a long-term yield-driven strategy matching the underlying nature of the assets and long-term commitment to all stakeholders' interests through a strong focus on creating sustainable value. Vauban focuses on primarily four areas of infrastructure: energy transition, social infrastructure, digital infrastructure, and mobility.



## KEY FIGURES 2022

| 65 | 4 | 17 | €7.2m | 4 |
|---|---|---|---|---|
| collaborators worldwide | continents | countries | + AUM turnover (47% in France) | offices (Paris, Luxembourg, Munich, New York) |

# NEW FORUM IN LILLE, FRANCE

VAUBAN INFRASTRUCTURE PARTNERS

## A Public-Private Partnership formed to create today's "Forum de Lille"

**The 'Conseil Départemental du Nord' was the initiative of a public-private partnership designed to achieve the 'Département du Nord services' regrouping as part of the restoration of the office building "The Forum" in Lille, France.**

In particular, it includes:
- The restoration of the entire Forum building (c.22,000m²);
- The building & development of an extension (c.8,000m²);
- The transfer of central services to the site;
- The building of c.100 parking spots in the basement; and
- The operation, maintenance, and major renovation of the entire project.

Duval Développement, the 'Caisse des Dépôts et Consignations', Vauban (through its fund FIDEPPP2), VINCI Construction France, and Dalkia won the partnership, which was signed in the beginning of 2019.

This is a greenfield project, and all authorizations, licenses, and permits have been obtained. The building has been cleared of asbestos & knocked down, and the construction of the new buildings has begun. Construction is estimated to end on December 31st, 2023.

This partnership has been set up to (i) promote and optimize the patrimony; (ii) offer high-quality living conditions and promote well-being at work; and (iii) develop a green and sustainable project.

### TECHNICAL CHARACTERISTICS

The goal of this project is to build 2 structures:

(1) One, "The Forum", which can welcome around 1,400 public officers with a total usable area of 21,697m²
(2) One of 24,000m² with shops, offices, and parking spots

Lille France | 83M EUROS | February 2019 | 20 years following end of construction

# PROGENI S.p.A

VAUBAN INFRASTRUCTURE PARTNERS

## Concession contract for the provision of non-medical services for the Niguarda Hospital in Milan

**Progeni S.p.A is a special purpose vehicle that manages the concession contract for the provision of non-medical services for the Niguarda Hospital in Milan, Italy. The Niguarda Hospital is one of the largest and most advanced facilities in the healthcare system of Milan, providing essential medical services to the local communities.**

This project is regulated by a concession agreement signed in 2006 between Progeni and ASST Grande Ospedale Metropolitano Niguarda. The project consists of the initial redevelopment of the hospital and the management of follow-on services during the operating phase. The construction of the hospital was completed in 2013 and operations will last until 2033. The project is in its operating phase providing non-medical services to the hospital such as maintenance and management of buildings and heating plants, provision of catering services for patients and employees, cleaning and waste services, and more.

Progeni S.p.A is a northern Italian PPP-based social infrastructure asset that generates stable and predictable cash flows. A large part of its revenues is availability- and service-based, thus bearing no volume risk. Progeni S.p.A provides significant social contribution through health benefits. All O&M companies have adequate environmental and social risk management systems in place, covering worker health & safety, service quality, and environmental management certified according to international standards. Progeni's services have ensured the continuity of healthcare, and thus provides an essential service to the community and economy.

### TECHNICAL CHARACTERISTICS

Niguarda Hospital has a total of 17 operating rooms and 1,350 beds with a total area of 305,000 square meters. The hospital premises also include an indoor shopping mall and meeting areas.

Under the terms of the CA, Progeni built the North and South blocks, the logistic center, the underground car park, and the technology center (housing all power services) and retains O&M responsibilities on these.

Operations started in January 2010 for the "Blocco Sud", a south parking area and underground passages (Phase 1). The "Blocco Nord" and some refurbished buildings entered operation in December 2013 (Phase 2).

Progeni also delivers some non-core services (laundry, waste management, catering, and energy management) to hospital buildings which it did not refurbish or build.

Milan Italy | c.300M EUROS | November 2020 | 27 years

INFRASTRUCTURES
AND PUBLIC SERVICES :
THE FRENCH KNOW-HOW
IN THE WORLD

# ROAD, RAILWAY, AIRPORT AND PORT INFRASTRUCTURES

Institut de la gestion déléguée

PROOF BY EXAMPLE

# THE NÎMES-MONTPELLIER RAIL BYPASS

## The first mixed line, passengers and freight, at national level

### FINANCING CONTRACT, DESIGN, CONSTRUCTION AND MAINTENANCE AS PART OF A PUBLIC-PRIVATE PARTNERSHIP

**The project, carried out under a 25-year partnership contract, includes financing, design, construction and maintenance of 80 kilometers of new line, including 60 kilometers of high-speed line between Manduel and Lattes in the extension of the LGV Midi-Mediterranean between Avignon and Nîmes.**

This mixed-traffic rail bypass (high-speed trains and freight trains) aims to improve:

- The quality of service for passengers, with a development of regional trains on the classic line and increased accessibility of regional metropolises thanks to the high-speed offer.
- Performance for freight transport between Spain, France and Italy.

### TECHNICAL CHARACTERISTICS

The construction by Bouygues Public Works of the Nîmes and Montpellier railway bypass (CNM) creates the first mixed line, passengers and freight, at the national level,with one of the largest countervailing operations in Europe :

- Hydraulic transparency, noise protection, protection of biodiversity native plants and fauna, involvement of SMEs and craftsmen.
- In connection with RFF, several ecological corridors, located on the route of the line, have been the subject of special attention in order to be protected.
- 126 protected species identified and 1,800 ha of compensatory measures put in place.

In total, 128 registered protected species benefited from compensation measures on 1800 hectares.

### RELATED CONTRAINTS IN THE FINANCE

The implementation of its financing, in the first half of 2012, in the midst of the public debt crisis in Europe, the downgrading of France's rating and a presidential election, also constituted a very complex challenge. Indeed, the CNM project benefits from a subsidy rate much lower than previous railways and this has led to having to raise for CNM a private financing equivalent to that of BPL (Brittany Pays de Loire).

France | Project montant $1.8 billion | December 2017 | 25 years

# CONSTRUCTION AND EXTENSION OF THE ISTRIAN MOTORWAY

BOUYGUES CONSTRUCTION

**Construction of 145 km new toll road and extension of this road along 28 kilometers**

## FINANCING, DESIGN, CONSTRUCTION AND OPERATION CONTRACT

**Croatia signed in 1995 a contract with Bina-Istra for its first motorway under a concession.**

The project foresaw the financing, design, the construction and operation of a toll road network 145 km long – the Istrian Y Project, the backbone of Istria's road network, with Bouygues Travaux Publics as main shareholder of Bina Istra. Operation & maintenance with 260 employees is carried out by Bina Istra O&M, a subsidiary of Bina Istra. The project was implemented under several stages, with 3 successive financial closing.

Bina Istra signed in October 2018 an amendment to the Concession Agreement to allow for expansion works (Phase 2B1) encompassing the construction of a second carriageway and emergency lanes on a 28km stretch of the motorway.

The project will significantly enhance road safety by reducing congestion, connect Istria with the rest of Croatia, increase tourism in region, and it will also largely contribute to regional growth with the involvement of more than 90% of local contractors and labour working under the supervision and coordination of Bouygues Travaux Publics.

### TECHNICAL CHARACTERISTICS

Bina Istra was able to finance the new development stage by raising an additional financing with term loans amounting 240 M€, with 4 new lenders, while keeping in place the existing financing.

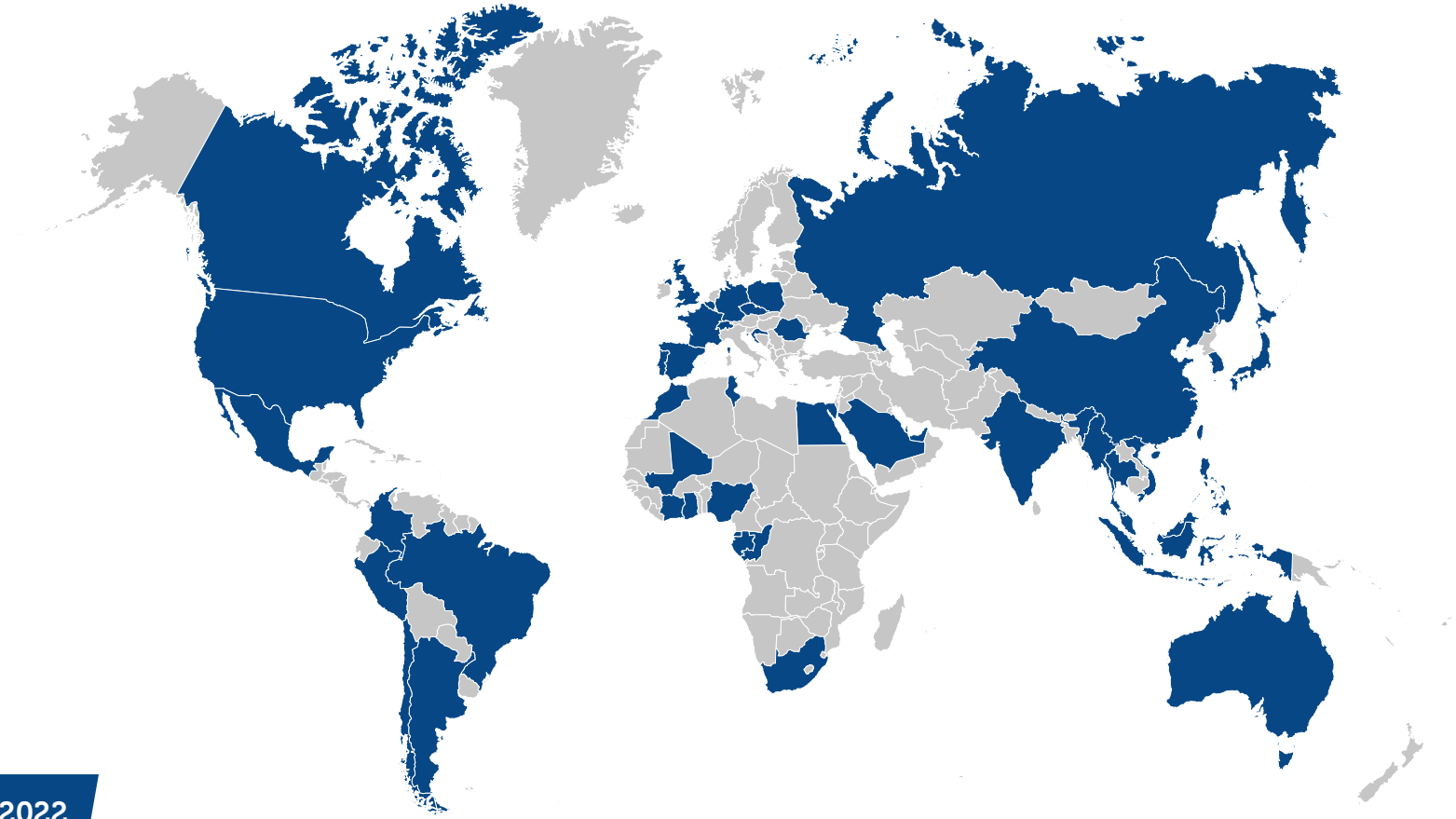
- The first challenge was to obtain the required waiver from the pool of 18 existing lenders and to structure intercreditor and security arrangements balancing interests from new and existing lenders.
- The second challenge was to obtain the approval by the European Commission of the new modified Concession agreement reflecting market practice and EU requirements, and the concession period extension for 6.5 years.

Croatia | A global investment of cca 970 M€* | First delivery in 1999 | 4 contracts since 1995

**The project was implemented under several stages, with 3 successive financial closing, representing a global investment of cca [800] M€, and a new stage representing cca 170 M€ of new capex.*

# BOUYGUES IN THE WORLD

**Group activities:** building, civil works, energies and services, concessions



## KEY FIGURES 2022

**53,000** collaborators in the world

**60** countries

**5** continents

**€12.8** billion of turnover (42% of international turnover)

# L2 MARSEILLE BYPASS

## Design-build, finance, maintenance and renewal of the road infrastructure and equipment

**The project comprises the design-build, finance, maintenance and renewal of the road infrastructure and equipment as part of a Public-Private Partnership (PPP) of 30 years.**

Since the 1930s, Marseille has had the objective to decongest traffic in the city centre by providing a north-east road alternative, linking the A7 and A50 motorways. The construction of the 10.9-kilometre L2 bypass was completed thanks to the works carried out by a consortium of companies led by Bouygues Travaux Publics and ordered by the Société de la Rocade L2. As part of this project, two separate stretches were designed and built: the new construction of a section to the north of the city (length of 4.7-kilometre) and the completion of the construction of the eastern section (length of 6.2-kilometre), which was started approximately 20 years ago.

Modernisation of this motorway involved the installation of innovative equipment such as automated traffic management systems as well as automatic detection of road incidents, transportation of hazardous materials, and outsized vehicles.

### TECHNICAL CHARACTERISTICS

- L2 North: 3 cut and cover tunnels. Work to be carried out under traffic on nearly the entire stretch.
- L2 East: 5 cut and cover tunnels. Work to be carried out on site, except the development work of the Florian exchanger and the A50 junction, and refurbishment work of the Tilleuls cut and cover tunnel, which must carried out under traffic.

The new link will deploy energy-efficient and environmentally friendly lighting and ventilation systems.

France
Marseille

€ 488M

Handover in 2017
Opened to traffic in October 2018

30 years

600 employees working on the project at peak period

# MELBOURNE METRO TUNNEL PROJECT

BOUYGUES CONSTRUCTION AUSTRALIA

## A highly complex and large project, with multiple interfaces


**As a member of the Cross Yarra Partnership consortium, Bouygues Construction Australia was selected to deliver the Melbourne Metro Tunnel, a project set to expand Melbourne's rail network with the design and construction of nine-kilometre twin tunnels and five stations: Anzac, Arden, Parkville, State Library and Town Hall.**

Bouygues Construction Australia is contributing to the construction of the Metro Tunnel in Melbourne as part of a public-private partnership (PPP). The Metro Tunnel project includes the construction of a 9-kilometre-long twin tunnels and five new underground metro stations, Anzac, Arden, Parkville, State Library (with a direct pedestrian connection with Melbourne Central station) and Town Hall (with a direct pedestrian connection with Flinders Street Station), as well as the development of parks, pedestrian areas and shops in the public spaces around these stations. The Metro Tunnel will increase the capacity of Melbourne's public transport network and relieve congestion in the existing network.

### TECHNICAL CHARACTERISTICS

The construction of nine-kilometre twin tunnels, five new underground stations and a revitalized open space above ground will ease congestion on the current rail network, increasing transportation capacity to more than 800,000 people per day.

Cross Yarra Partnership has signed a contract to finance, design, construct and maintain the tunnel and stations package for approximately 25 years as part of the Metro Tunnel Project.

The Metro Tunnel will free up Melbourne's biggest bottleneck, by establishing a direct connection between North West and South East suburbs of Melbourne, which concentrate most of the population growth by 2031 (+25%).

Australia
Melbourne

AUD 6 B

September 2024

25 years

3,100 employees working on the project at peak period

# P3 FOR THE TROISSEREUX BYPASS

COLAS
WE OPEN THE WAY

## Finance, design, build, operation and maintenance of the Troissereux Bypass

© Yves Soulabaille

### PUBLIC-PRIVATE PARTNERSHIP (P3)

**On January 13, 2014, the Troissereux bypass company D3, comprised of Colas Nord-Est (subsidiary of Colas), Bouygues TP Régions France (subsidiary of Bouygues Construction), and LIRI (an indirect wholly-owned subsidiary of HICL Infrastructure Company Limited, an investment company listed on the London Stock Exchange), signed with the Oise Departmental Council a 25-year public-private partnership (P3) contract covering the finance, design, construction, operation and maintenance of the Troissereux Bypass.**

Colas Nord-Est, as part of the consortium, built a 7.2-km four-lane roadway which has enabled users on Route D 901 to reach Beauvais safely and more quickly since the end of 2016.

The project also included the construction of 4 engineering structures as well as a 275-meter covered trench. The work lasted 35 months for an initial investment of 62 million euros. A total of 100,000 tonnes of asphalt mix was applied on the Troissereux Bypass.

The operation, maintenance and renewal were entrusted to Aximum, a subsidiary of the Colas Group, starting from the commissioning and for a period of 22 years.

### TECHNICAL ISSUES

One of the most complex issues on this project involved the actual land required to build it, as the route crosses through farm land. Good knowledge of the local network was an excellent asset.

Another complex environmental issue involved the construction of the covered trench. The structure crosses through a forest, and was designed to conserve the ecological corridor of a protected species of bat at the location.

Troissereux
France

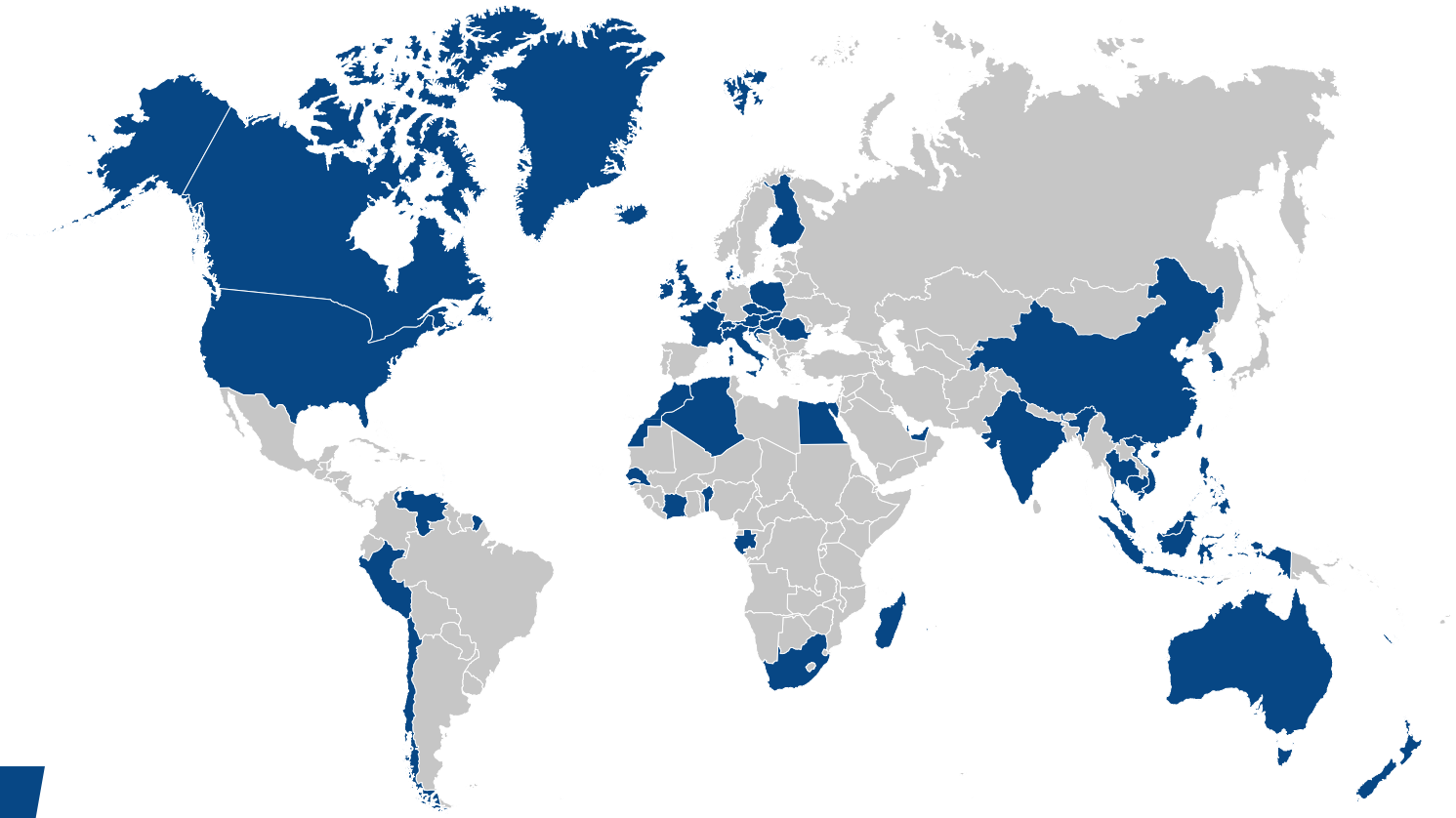
62 million euros

January 13, 2014

25 years

# COLAS AROUND THE WORLD

**Activity:** World leader in the construction and maintenance of transport infrastructure - roads, construction materials, railways, water & energy transport.



## KEY FIGURES 2021

| 57,000 | 50 | 5 | 13.2 | 60,000 | 3,000 | 800 |
|---|---|---|---|---|---|---|
| employees worldwide | countries | continents | billion euros in revenue for the Group (54% outside of France) | projects per year | industrial sites | local entities |

# THE CAYENNE BUS RAPID TRANSIT NETWORK

COLAS
WE OPEN THE WAY

## Signature of a major infrastructure PPP contract


**In December 2019, the Centre Littoral de Guyane (CACL) conurbation in Cayenne, French Guiana signed a partnership contract (PPP) with IBYS involving the design, construction, financing and maintenance of a Bus Rapid Transit (BRT) network for an overall duration of 33 and a half years.**

The project involves the construction of two BRT lines, with a total length of 10.1 km, which will serve, via 21 stations, key locations across the city of Cayenne such as the Andrée-Rosemon Hospital and the University of French Guiana, and will make it possible to recreate links between the districts.

The network is scheduled to be completed by mid-2023, after a 42-month period of studies and work.

### TECHNICAL INFORMATION

In addition to the construction of the two bus lines and the stations, the design-build consortium, which includes Colas Projects and Ribal TP, will construct a park-and-ride facility, two multimodal interchanges, a maintenance and storage center, along with the partial redevelopment of public spaces surrounding the network, an extra boost to many urban areas across Cayenne.

French Guiana
Cayenne

€142 million: PPP contract signed with CACL
€135 million: construction contract

mid-2023

33.5 years

300 employees at the peak of the project

# THE FIRST HIGH-SPEED TRAIN LINE IN AFRICA

COLAS
WE OPEN THE WAY

## Design-build of a 185-km section between Tangier and Kenitra, Morocco

© Jean-Michel Ruiz – Maroc Images

## DESIGN-BUILD CONTRACT

**In 2013, Colas (Colas Rail and Colas Rail Morocco) won a contract with Egis Rail to design and build the Tangier-Kenitra high-speed railway line. This new rail service has been given the name "Al Boraq", in reference to the winged horse in islamic poetry.**

The construction involved the track (studies and work on 185 kilometers of double track), catenaries and two engineering structures (studies, supply and works) located at Kenitra and Tine Sidi El Yamami.

GTR, a Moroccan road subsidiary of Colas for 90 years, also took part in the project by performing the earthworks, some 5 million m³ of cut and 2.5 million m³ of fill.

Out of the 1,000 Colas employees involved in this project, 95% were hired locally. A training center entirely dedicated to the project was opened to train new employees in railway safety rules. The organization made it possible to ensure a high level of safety on the construction site in line with Colas values and to start with an operational record: 3,564 meters of track laid in one day by the teams!

The railway and catenary lines were fully integrated and industrialized. Optimized interface management resulted in an average pace of 1,000 m per day.

Inaugurated by His Royal Highness the King of Morocco Mohammed VI, in the presence of French President Emmanuel Macron in the fall of 2018, the rail link between Tangier and Casablanca is the first high-speed rail line in Morocco and Africa. Trains travel at 320 km/h.

"*This project provides new structure for Morocco. It stems from a partnership between rail specialists who have been able to benefit from their local integration and pool know-how, engineering and technical expertise in the service of a major infrastructure project, unprecedented on the African continent,*" explains a senior official of the Moroccan railway authorities.

### TECHNICAL ISSUES

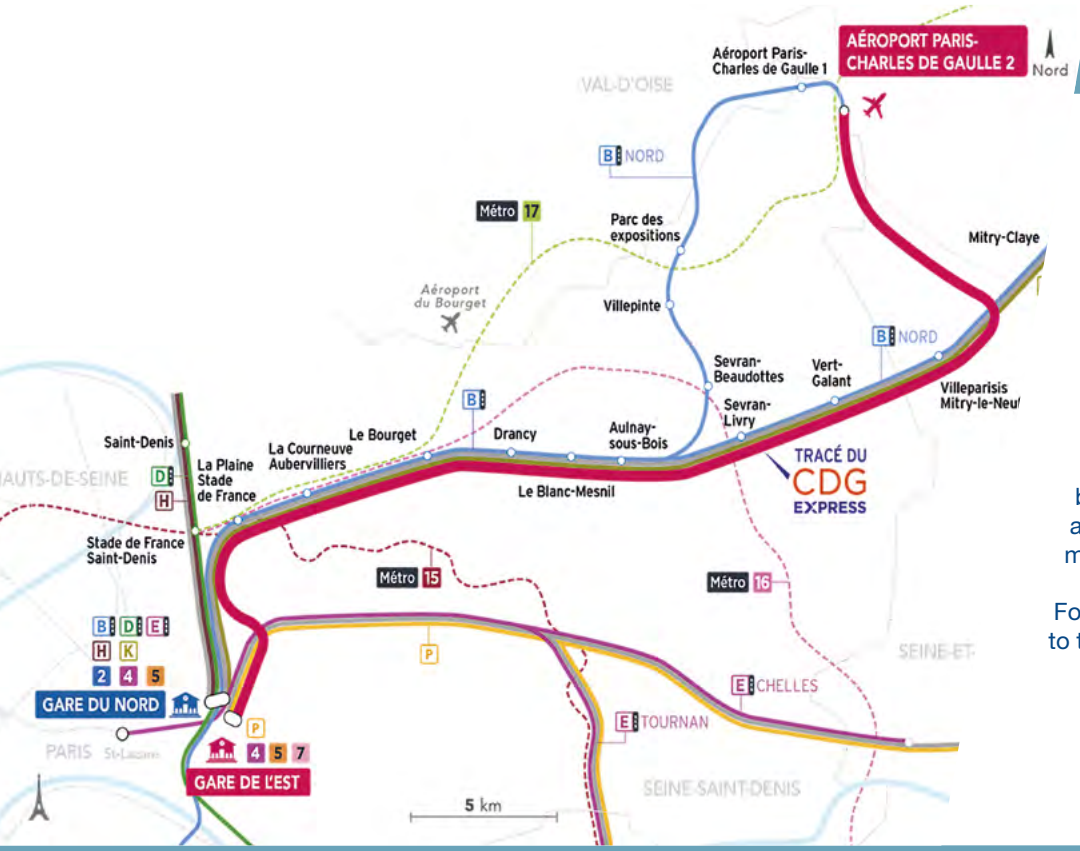
To ensure the stability of the viaduct located south of Tangier in a swampy area, piles were drilled 70 meters deep. There is not only a seismic fault, but also frequent, violent winds in the area, which meant that shock absorbers had to be added to the pillars of the viaduct along with continuous surveillance of the sensors.

Colas Rail was in charge of managing the interface and the use of the railways for all participants, as well as rail safety during the acceleration tests. The system allowed the safe completion of all railway work as well as peak speeds of up to 354 km per hour.

Morocco | €136 million | September 1, 2013 | 42 months | 1,000 employees

# CDG EXPRESS

## Build and operate a direct rail link between Paris and its main airport




## CONCESSION CONTRACT (INFRASTRUCTURE CONCESSION)

**The project management, financing, design, construction and provision of the infrastructure are provided under a concession contract, granted by the State to a project company owned equally by ADP, SNCF Réseau and the Caisse des Dépôts et Consignations.**

Paris is now the world's leading tourist destination. The Ile-de-France region is also an economic hub with high added value. However, there is no express link from Charles de Gaulle airport to Paris, as there is in many of the world's major capitals.

The «CDG Express» project, which aims to build and operate such a direct rail link between Paris and its main airport, adapted to the needs of air passengers, appears as a determining factor for the tourist attractiveness and economic competitiveness of the agglomeration.

The works for this dedicated rail service to Paris Charles de Gaulle airport from the Gare de l'Est consist of 24 km of existing tracks and the construction of 8 km of new tracks. The services will be provided by the Hello Paris rail company (Keolis-RATP Dev consortium), appointed in July 2019 after a competitive procedure, with a frequency of 4 trains per hour, from 5 a.m. to midnight, in 20 minutes and for a basic tariff of €24.

For many travelers, CDG Express will be the first image of France. Its quality of service must be equal to the national and regional challenges. Its commercial service date is expected to be in 2027.

Region Ile-de-France
France

2.1 billion euros

2027

50 years

# PRINCIPAUX **CHANTIERS 2022**

**PARMI 1750 CHANTIERS PROGRAMMÉS**

**5,6** milliards d'€ D'INVESTISSEMENTS

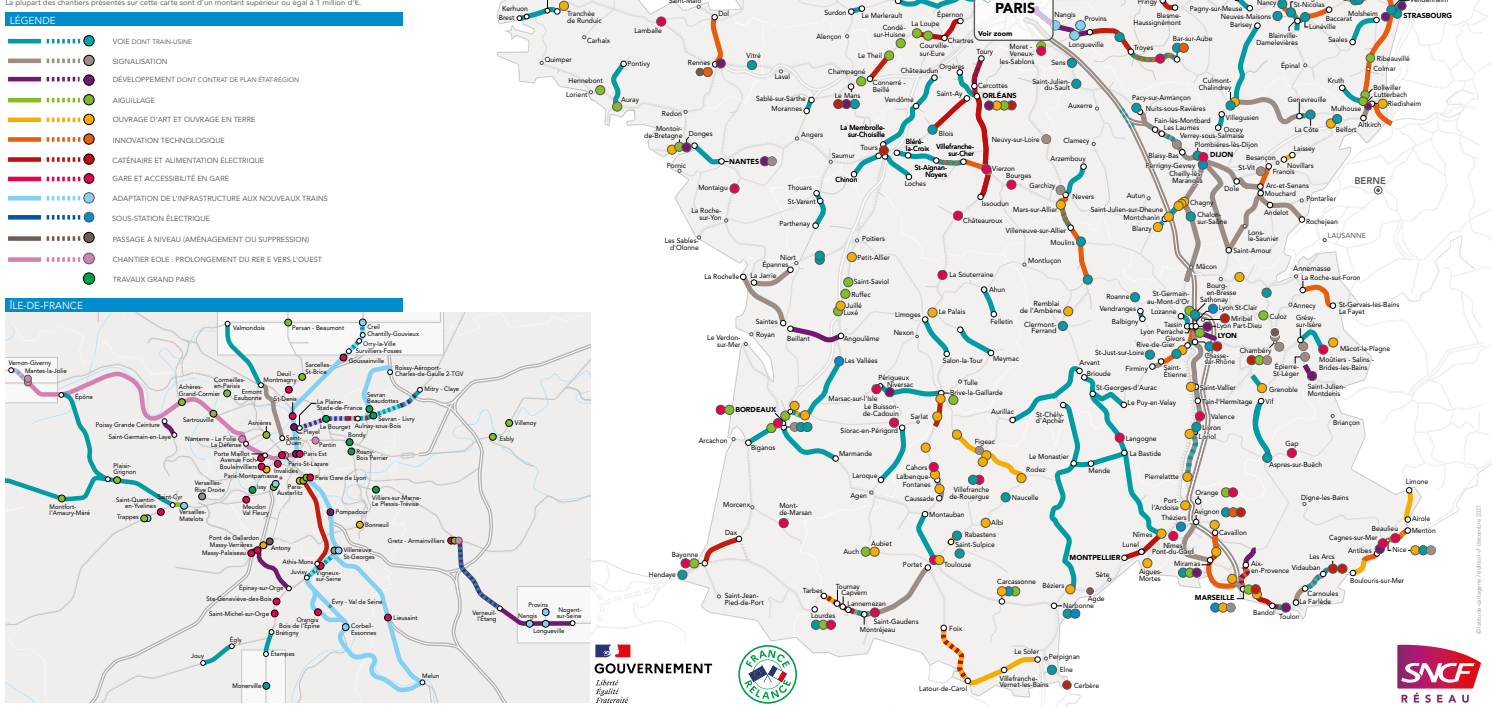
**1752** CHANTIERS MAJEURS

**732** km DE VOIES RENOUVELÉES

**308** km DE CATÉNAIRES VÉRIFIÉES OU REMPLACÉES

**406** AIGUILLAGES REMPLACÉS

La plupart des chantiers présentés sur cette carte sont d'un montant supérieur ou égal à 1 million d'€.




## GROUP ACTIVITIES :

Within the SNCF Group, SNCF Réseau is a key player in the development of the rail offer in France and across Europe. SNCF Réseau is responsible for selling access to the French national rail network, for developing and modernising infrastructure and making it safer, and for maximising train traffic across the whole of France.

## KEY FIGURES 2022

**5**
million passengers daily

**28,000**
km of line, including 2,700 km of high-speed line

**2 200**
interlockings

**5**
railfreight motorways

**250,000**
tonnes of freight transported every day

# GRAND PARIS EXPRESS

Société du Grand Paris

## A new metro for the Paris area

Société du Grand Paris / Olivier Brunet

**Thanks to four new metro lines around Paris (lines 15, 16, 17 and 18) and the extension of line 14, the Grand Paris Express will provide rapid links between suburban areas. It will take the pressure off the main public transport system and offer quicker mobility solutions to more than two million passengers. In many cases, it will be a convenient alternative to private cars for the daily commute.**

The new metro will bring the inhabitants of the Île de France closer to their place of work or study, healthcare facilities and leisure and cultural amenities. It will serve the main business districts (La Défense, la Plaine Saint-Denis, Val de Fontenay etc.), key universities and scientific clusters (Institut Gustave-Roussy, Paris-Saclay, la Cité Descartes etc.) as well as Paris' three airports and the TGV high-speed railway stations at Massy-Palaiseau and Versailles Chantiers. In all, 130 universities and higher education establishments, 408 healthcare centres and 270 cultural venues will be just 10 minutes' walk away from the future stations (source: Apur Paris urbanism agency).

Grand Paris Express is also an urban development project. Its arrival will give rise to a variety of new developments leading to greater diversity in terms of housing, retail spaces and services. The areas around the stations will be home to low carbon, energy-efficient real estate projects (bio-based building materials, ecodesign, thermal standards etc.). This new housing stock will curb urban sprawl and reduce land take in the Île-de-France region.

### TECHNICAL CHARACTERISTICS

The metro will be fully automatic to ensure a reliable service. Trains will arrive in the stations every 2 to 3 minutes and will travel at an average speed of 55 to 65 km/h (maximum speed 110 km/h). The Grand Paris Express will limit energy consumption to a minimum thanks to modern train design, full-electric service braking, use of LED lighting etc. High-speed internet access and USB plug sockets will be available on board.

Île-de-France
France

€36.1 billion (economic conditions in 2012)

Between 2024 and 2030

2015 to 2030
(construction work)

**Group activities:** Société du Grand Paris is in charge of programme management for the Grand Paris Express. It manages this transport and development project for the Île de France area in conjunction with its partners.

Société du Grand Paris


## KEY FIGURES 2022

Nearly **1,000**
Société du Grand Paris has a headcount of almost

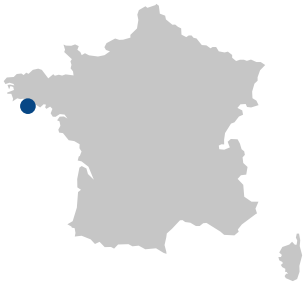
**4**
new metro lines

**1**
extension of an existing metro line

**200**
km of new lines

**68**
stations

# CABLE RENEWAL ON THE ISLAND OF GROIX



**In close collaboration with Orange, Enedis is renewing an electric cable incorporating fibre optic cable between Ploemeur and Groix**


**A large-scale project on the Island of Groix that respects the environment and serves the needs of the islanders, the electricity consumed is produced entirely on the mainland and transported by two submarine cables.** Enedis and Orange have concluded an agreement to pool their resources, in terms of investments and industrial work, to deploy fibre optic cable on the Island of Groix at the same time as the installation of a new submarine cable.

Enedis is financing the replacement of the hybrid electric cable, which represents 87.5% of the overall cost of the operation, and Orange is financing the works relating to the fibre optics, which represent 12.5%. The final phase of the operation, carried out in early May 2022, involved laying the submarine cable. This initiative took place mainly at sea and required positioning the cable at pre-defined locations before laying it on the seabed and landing it at Ploemeur and Groix.

The electric cable will connect the ports of Lomener (Ploemeur) to Queleight (Groix). This hybrid cable has the unique feature of incorporating three copper cables for the transfer of power (Enedis) and a fibre optic cable (Orange). Work to replace the electric cable began in mid-February 2022 and continued until June 2022. It was carried out in several phases, on land and sea. The hybrid cable was manufactured in France and assembled in Germany by the PRYSMIAN/SILEC group.

## ENVIRONMENTAL PERFORMANCE

This worksite is exemplary in terms of biodiversity. One of Enedis' commitments is to reduce its greenhouse gas (GHG) emissions by 20% by 2025 to contribute to carbon neutrality by 2050. To this end, Enedis reduces its impact on the environment during its activities and works to preserve biodiversity. The company has improved its drilling and pruning techniques to take account of the plant species encountered. On Groix, the cable passes through a drilling at the top of the cliff and exits into the sea. In order to avoid an eelgrass bed, a protected species that only grows on sandy seabeds, an additional 200 m of drilling has been carried out. This operation represented an additional cost of approximately €500,000, paid for by Enedis. At the offshore exit of the drilling, a natural system (bubble curtain) was implemented by divers to control the suspension of sedimentary residues. Moreover, Enedis chose to carry out its work at the beginning of spring in order to avoid hindering tourism or the nesting of birds.

Île de Groix
France

€4.5 million invested

May / June 2022

2 years of work

# VALSERHÔNE URBAN DEVELOPMENT PROJECT

NGE CONCESSIONS

## The first urban Public-Private Partnership in France


### PUBLIC-PRIVATE PARTNERSHIP

**The Valserhône urban development project (formerly known as Bellegarde-sur-Valserine) is a public-private partnership for the restructuring of roads in the municipality of Bellegarde-sur-Valserine in the Ain department.**

This project is the first public-private partnership in France to combine the implementation and financing of a complete development project for an urban center. The aim of the operation is to improve the image and urban quality of the town, to adapt the roads to their main uses (shops, pedestrians, traffic flow) and to upgrade the existing networks (electricity, gas, water, etc.). Prior to the work phase, numerous public meetings between NGE teams and elected officials maintained an open and ongoing dialogue with all stakeholders (residents, merchants, and users).

The bid covers 6.62 kilometers of roads, including 4 kilometers of departmental road and representing a surface area of approximately 100,000 square meters. These roads correspond to approximately 80% of car and pedestrian traffic flows. Completed in August 2019, the work lasted less than 3 years. NGE was responsible of the design and build and operate and maintain of this project and involved several subsidiaries such as Guintoli, EHTP and Siorat. NGE Concessions was the consortium leader on the project. Valserhône took over as the dedicated project company.

### TECHNICAL CHARACTERISTICS

The scope of the road restructuring covers:

- The repair of the roadway,
- The construction of sewage and stormwater systems, as well as water and electricity networks,
- The construction of civil engineering infrastructures for the development of future networks (Telecom/Optical fibers/Video protection),
- The construction of green and recreational areas.

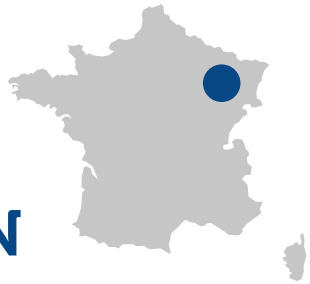
Bellegarde-sur-Valserine
France

€ 15.2 million

January 2020

15 years

# TWO FIBRE OPTIC NETWORKS IN GRAND-EST REGION



NGE CONCESSIONS

## The first non-recourse projects financing for fibre optic at a regional scale in France

### DBFOM CONTRACT

**NGE Concessions, leader of the winning consortium, is involved in the financing of the rolling out of two Very High Speed networks connecting more than one million premises cumulated.**

One of the NGE group subsidiaries, expert in fibre connections, is the main constructor for these projects. The networks are covering seven departments in the east of France: le Bas-Rhin (05), le Haut-Rhin (04), Ardennes (08), Aube (10), Marne (51), Haute-Marne (52), Meurthe-et-Moselle (54), Meuse (55) and Vosges (88).

The 5,100 municipalities targeted by these networks are less densely populated areas where private operators did not invest in rolling out a dedicated infrastructure due to low profitability. Therefore, to improve attractiveness of the territory, Grand Est region has implemented two «Public Initiative Networks (PINs)» called Rosace and Losange. Two large-scale projects likely to attract French operators (Bouygues, Orange, SFR and Free), who are responsible for the marketing of the lines deployed.

Most of fibre connections are in areas where internet speed is less than 3Mbt/s. The entire networks will be completed within seven years of construction, including one year of studies. To roll out these networks, NGE will benefit from logistical, technical, operational, and commercial synergies given the geographical proximity between the two PINs. These public offers are part of a national plan called “France Very High Speed” which aims at providing fibre solution to 100% of the French population by 2022.

### TECHNICAL CHARACTERISTICS

About 1.3 million connections in total.

Difficulty for operators to anticipate penetration rate, depending on various geo-marketing factors. That led to build a downside business case to ensure a robust financing plan.

Région Grand-Est France

€1.75 bs in total

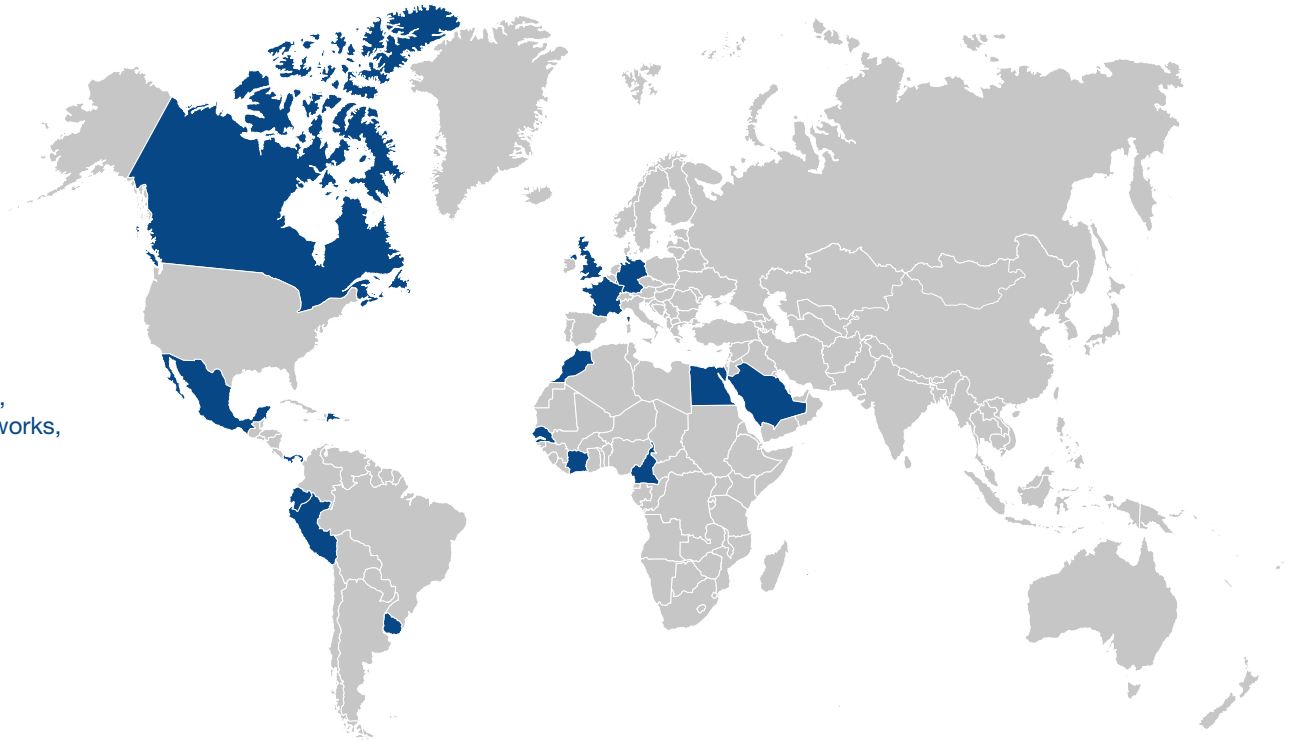
March 2022 for Rosace project and T1 2023 for Losange project

30 years for Rosace project and 35 years for Losange project (including construction period)

1 850 employees

# NGE CONCESSIONS IN THE WORLD

**Group activities:** Coordinate with a single department 7 core business sectors of construction and public-sector expertise. A Concessions core business offers complementary expertise in project funding, makes equity investments and develops the Group's concession assets. It also includes a team dedicated to property development.



- Urban infrastructures & earthworks,
- Pipelines & other underground networks,
- Civil engineering,
- Roadbuilding & road equipment,
- Geotechnical & safety contracting,
- Rail infrastructures,
- Building construction.

## KEY FIGURES 2022

| | | | | | |
|---|---|---|---|---|---|
| **16,000** collaborators worldwide | **17** countries | **4** continents | **2.8** billion € in 2021 among which 88% in France | More than **10,000** industrial sites or worksites every year | **€4.4** billion order book as of 1 april 2022 |

# THE FUTUROSCOPE ARENA

NGE CONCESSIONS

## A multi-purpose hall to be used for sport, cultural and entertainment events

### PUBLIC-PRIVATE PARTNERSHIP

**Futuroscope Arena is a multimodal facility dedicated to culture, sports and entertainment located a few kilometers north of Poitiers, close to the "Futuroscope" Park, in Vienne department ("Nouvelle-Aquitaine" region).**

The project was initiated by Vienne Department under a 30-year Partnership Contract. This arena was designed and built by several subsidiaries of NGE: NGE Bâtiment as lead contractor, Lagarrigue for the concrete prefabrication, NGE Connect for the entire Wi-Fi network, and Guintoli for the earthworks, underground networks and treatment of the surroundings. NGE Concessions was the consortium leader on the project. Futurarena took over as the dedicated project company.

The delivery, initially scheduled for the end of May 2022, took place on April 4th, 2022 despite the stoppages due to the COVID19 health crisis. These shortened delays were made possible thanks to several key success factors:

- The use of Building Information Modeling from design to execution, resulting in fully optimized maintenance and upkeep throughout the life of the project,
- The sourcing of local companies associated with the project: 72% of the companies are from the region,
- Implementation of NGE's specific multi-expertise approach, with centralized management of all the Group's businesses and a single point of contact to ensure the success of the project.

Designed to be highly modular, the large 6,000-seat hall will be able to host nearly 110 events each year (shows, conventions, and sport competitions). The Poitiers Basket 86 club will play its home games there and the Futuroscope Park will also organize a show during the summer.

### TECHNICAL CHARACTERISTICS

The whole equipment offers a great flexibility of use. Depending on the type of event, the spaces can be partially or entirely activated. The modularity of the bleachers allows several possible layouts for the hall.
The areas allocated to circulation have also been optimized so as not to increase the built area unnecessarily and to preserve a high level of comfort for users at the same time.

Poitiers
France

€ 51.1 million

April 2022

30 years

# SAINT-FLOUR BYPASS

NGE CONCESSIONS

**This project was designed to improve access to the French Department of Cantal**

## PUBLIC-PRIVATE PARTNERSHIP

**The Saint-Flour bypass is a public-private partnership which consists in the creation of a new 7.1 km road. It links the RD 926 secondary road coming from the village of Roffiac to the Rozier-Coren industrial zone (Saint-Flour municipality). The purpose of this project is to reduce the traffic congestion that passes through Saint-Flour, and to connect the cities of Aurillac and Murat directly to the A75 motorway.**

The works was carried out by NGE (NGE GC for civil engineering, GUINTOLI for roadworks and earthworks, and SIORAT for the road) in partnership with local companies. NGE also provides maintenance and major upkeep until the end of the contract. NGE Concessions was the consortium leader on the project. “La Planèze RD 926” took over as the dedicated project company.

Only 14 months of administrative instructions and 22 months of work were required to complete this important project for Cantal department. Such optimized delays were made possible thanks to NGE’s multi-expertise knowledge, and the global approach allowed by Public-Private Partnerships.

### TECHNICAL CHARACTERISTICS

All in all, the construction of the bypass includes 9.6 km of secondary roads, 4.3 km of re-establishment of agricultural roads, 5 crossroads, 13 engineering structures, 5 water retention and treatment basins, 6 km of guardrails installed, 3,800 ml of collectors, 30,000 t of bituminous materials and 625,000 $m^3$ of cleared and reused materials (of which 490,000 $m^3$ for backfill materials and 135,000 $m^3$ for landscaping).

The project had to meet several environmental challenges:
- Implementation of water collection and treatment systems,
- Protection of the water resource captured for drinking water supply,
- Protection of plant species during the construction phase,
- Installation of dedicated equipment to reduce the road impact on chiropteran and otter movement corridors.

Saint-Flour France | €28.5 million | January 2020 | 20 years | 100 employees

# FERROCARRIL CENTRAL RAILWAY IN URUGUAY

NGE CONCESSIONS

## NGE's first international Public-Private Partnership

### PUBLIC-PRIVATE PARTNERSHIP

**The 273 km long rail line in Uruguay will connect Paso de los Toros to the capital city, Montevideo. This strategic railway - the largest infrastructure investment in the history of the country to date - will allow faster and easier access to Montevideo for the biggest paper mill of the country owned by Finnish papermaker UPM.**

The Republic of Uruguay is the contracting public authority and NGE Concessions is a stakeholder in the awarded concession consortium. This project illustrates the strategy of NGE to partner with local players and international companies in order to share and improve each one's expertise.

The construction period was scheduled to last 36 months, including dismantling of the existing track, earthworks, networks, civil engineering and track laying. An operating period of 16 years will follow. In line with other projects in Santo Domingo, Mexico, Panama and Ecuador, Ferrocarril Central consolidates NGE Group's reputation as a rail expert in Latin America. It also demonstrates NGE's ability to handle every stage of a billion-dollar project, due to its comprehensive in-house expertise.

### TECHNICAL CHARACTERISTICS

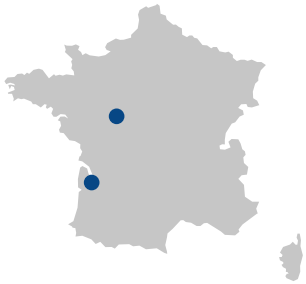
The installation of the new railway involves rehabilitation of existing railway structures and construction of additional structures: existing bridges (115), new bridges (49), trench sections (2), drain and flooding structures (282), new station stops (17), level crossings (300) and warehouse (4).

### COMMISSIONING CONSTRAINTS

- Due to its length, the track passes through very different areas, challenging the construction and supply methodology which varies according to the landscape: urban, peri-urban, and non-urban.
- To deliver the project on time, the constructors had to build some specific supply plants on site to meet the needs of the project and avoid dependence on external suppliers.

Montevideo (Paso de los Toros) Uruguay | €1.1 bs | T4 2022 | 19 years | 3,500 employees

# HIGH SPEED LINE SOUTH EUROPE ATLANTIC



VINCI CONCESSIONS

## A new breath for the South-West region.

## CONCESSION CONTRACT

**South Europe-Atlantic high speed line, operated via a concession scheme by VINCI Concessions through its subsidiaries Lisea and Mesea, was commissioned in July 2017 after 5 years of work. It puts Bordeaux just two hours from Paris.**

The line welcomed more than 20 million passengers in 2018 and, in 2019, Paris-Bordeaux became the busiest rail line in France after Paris-Lyon. A flow that feeds tourism and more broadly the local economy.
The completion of these 302 km of new lines (and 38km of connections) is one of the largest infrastructure projects in Europe. Exceeding the requirements of the concession contract, the delivery of this structuring project by the concession company LISEA took place one month in advance.

Since the start-up, the MESEA teams, in charge of the operation and maintenance of the line, are active 24 hours a day to ensure the reliability of traffic on the HSL. They meet particularly high safety and performance standards. Multi-skilled and innovative in their methods and tools, the teams have developed predictive maintenance capabilities based on data collection and artificial intelligence.

### TECHNICAL CHARACTERISTICS

- 302 km of new lines equipped with the ERTMS system;
- 38 km of connections;
- 500 works of art.

### CONSTRAINTS OF COMMISSIONING

223 protected species, 14 Natura 2000 areas and 3700 hectares of environmental compensatory measures make the HSL SEA one of the largest environmental projects in Europe.

France | 7.7 billion euros including 6.3 billion of investments | July 2, 2017 | 50 years | 226 employees

# IN GREECE, VINCI HIGHWAYS SETS NEW STANDARDS FOR HIGHWAY QUALITY

## Innovative practices and technologies to ensure the best level of safety on Greek Highways

**The Mobility Awards, which recognize innovative practices and technologies used by companies in the automotive sector in Greece, rewarded the many initiatives implemented by VINCI Highways to ensure a high level of safety on its Greek freeways.**

VINCI Highways (VINCI Concessions), the concessionaire of the Athens-Patras freeway through its subsidiary Olympia Odos, has been awarded six prizes at the 2021 Mobility Awards, including the «Motorway of the Year» award.

This award recognizes the numerous initiatives implemented by VINCI Highways to maintain a high level of safety on the freeway, as well as those in favor of environmental protection, including:

- The launch of the country's first kilometre-based charging system,
- Motorist safety awareness initiatives,
- The Smart Tunnel system, which can measure and collect data to optimize maintenance,
- The installation of LED lighting in 17 tunnels, the protection of wild animal species and the use of certified renewable energy.

A pioneer in the development of intelligent infrastructure, VINCI Highways has just renewed its partnership with Greece by being awarded a 75 km extension of the concession by the Greek authorities to the town of Pyrgos, located in the western part of the Peloponnese peninsula.

This project is part of the Trans-European Road Transport Network, a European Union program designed to facilitate the exchange and interoperability of transport infrastructures in Europe.

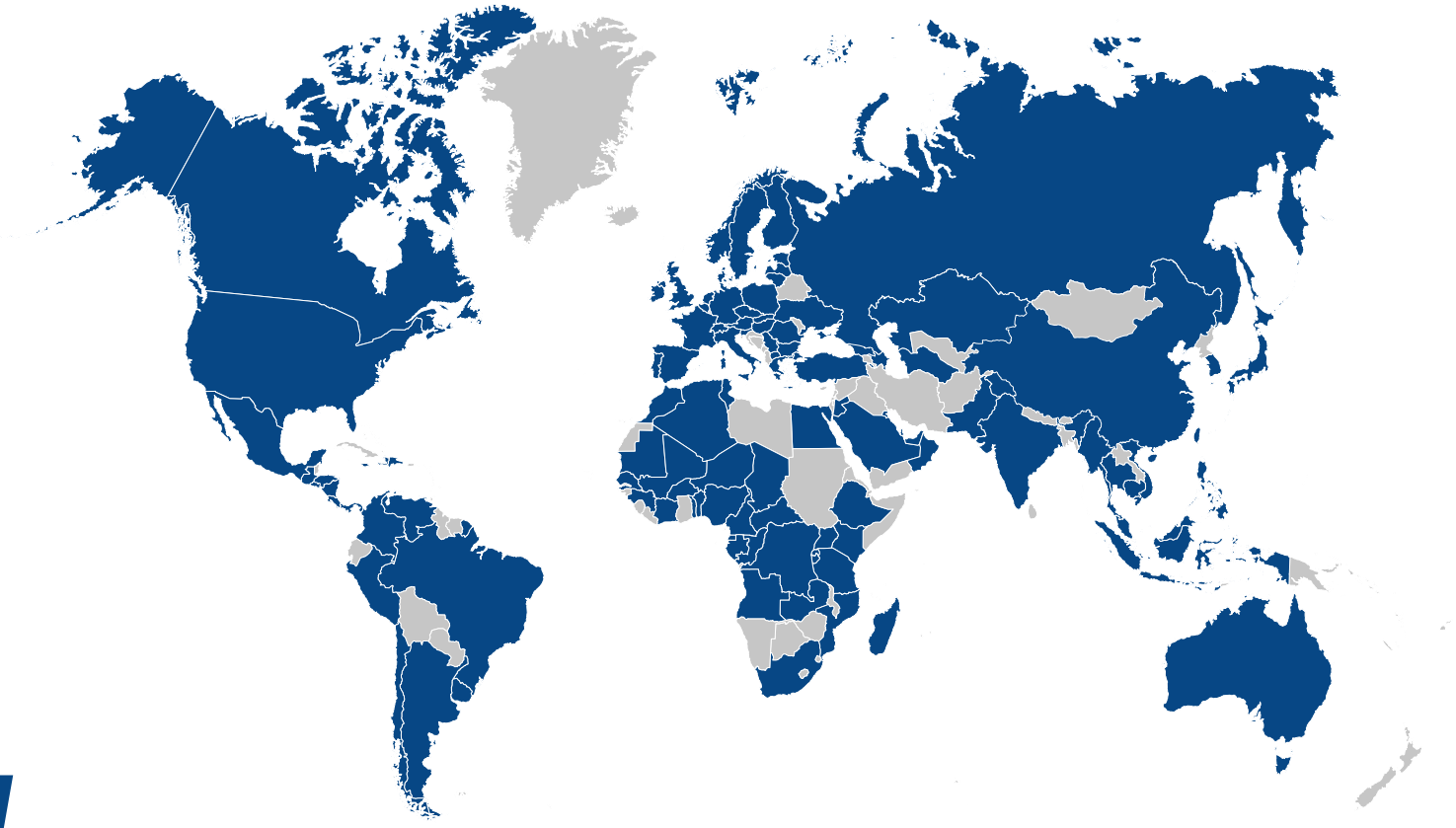
### TECHNICAL CHARACTERISTICS

VINCI Concessions and its partners will be responsible for the design, financing and construction of this new section, and then for its operation until 2044.

Greece | 331 millions euros | 2017 | End of concession in 2044

# THE VINCI GROUP IN THE WORLD

**Group activities:** we design, finance, build and operate infrastructure and facilities that help improve daily life and mobility for all

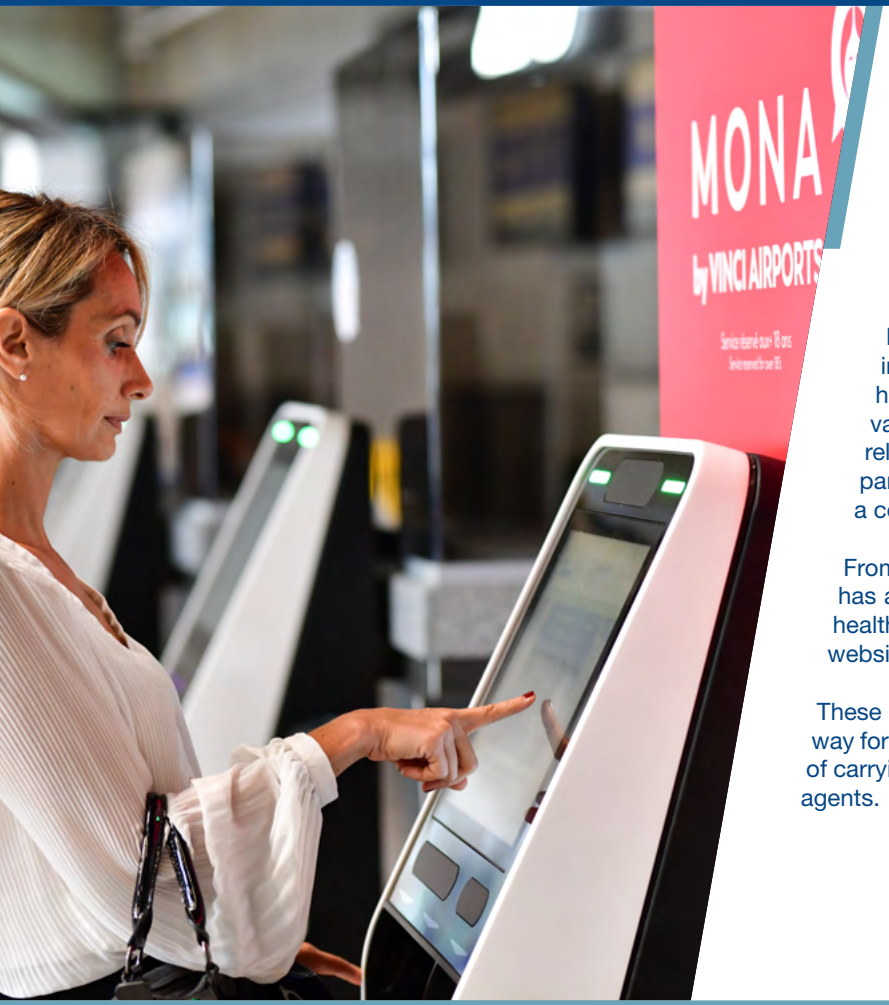


## KEY FIGURES 2021

| 219,299 | 120 | €49,396 | 280,000 |
|---|---|---|---|
| collaborators worldwide | countries | billion of revenue | sites |

# VINCI AIRPORTS PAVES THE WAY FOR AN EVER MORE INNOVATIVE PASSENGER EXPERIENCE

## A major step towards tomorrow's mobility




**MONA makes VINCI Airports the first airport operator in the world to launch a biometric assistant from home to the plane.**

### TECHNOLOGY AT THE SERVICE OF THE PASSENGER EXPERIENCE

In developing its airports, VINCI Airports relies on digital technology and integrates the best of it to build the most innovative customer experience.

Launched in a pilot phase since October 2020 at Lyon-Saint Exupéry Airport, VINCI Airports' center of excellence for innovation, MONA travel assistance is a world first and offers passengers a unique experience: the airport with their hands in their pockets. This biometric innovation, based on facial recognition, allows passengers to pass through the various checkpoints without having to show their identity documents, from baggage drop-off to boarding. MONA also relies on a relationship marketing solution to offer passengers personalized services and experiences, developed in partnership with airlines and airport businesses, directly on their phone. This is a world first in France, launched following a consultation with the CNIL, and will enhance the attractiveness of airports.

From November 2021, the use of this technology has been extended to Lisbon airport. On this occasion, VINCI Airports has also developed a set of innovative services for passengers, including a digital platform - U-monitor - that reinforces health safety, a passenger information service updated in real time and available on Whatsapp, Facebook and the airport's website, and a dynamic system for monitoring aircraft carbon emissions according to taxiing time and engine type.

These innovative measures, which demonstrate a desire to revitalize the airport through digital technology, are paving the way for other airports in the VINCI Airports network. In Japan, Kansai airport has deployed the Secom robot, which is capable of carrying out security missions, and in Kobe, a robotic assistance service has recently been added to the mission of airport agents.

Lyon
Lisbonne

70 millions

2020

Acquisition in 2016 of the share held by the State (60%) by the consortium composed of VINCI Airports - Crédit Agricole Assurances - Caisse des Dépôts group. Concession until 2047

INFRASTRUCTURES
AND PUBLIC SERVICES :
THE FRENCH KNOW-HOW
IN THE WORLD

# PUBLIC TRANSPORT OF PASSENGERS

PROOF BY EXAMPLE

Institut de la
**gestion déléguée**

# NGV AND BIONGV BUSES AND COACHES FOR CLEAN AND SUSTAINABLE MOBILITY

KEOLIS

## A solution for urban and interurban transport

©Keolis

### AUVERGNE-RHONE-ALPES REGION

**In Auvergne-Rhône-Alpes, the intercity buses operating on the region's most emblematic line run on bioNGV (Natural Gas for Vehicles).** This is a first for the region and for Keolis Drôme Ardèche, the first Keolis Group subsidiary to introduce this low-carbon form of motorisation on an intercity line.

Since June 2020, Keolis Drôme Ardèche has been replacing the diesel coaches on the region's most important line (X73) with NGV coaches, 50% of which are fuelled with bioNGV (gas from renewable sources). This sustainable form of motorisation was identified by Keolis and the PTA as the most appropriate. Line X73 is symbolic, with 300,000 passengers and 1.3 million kilometres travelled each year. It is also the longest line in the network, because it covers 80 km to serve the Aubenas-Privas-Valence-Valence TGV hub with daily coach services of 280 km on average.

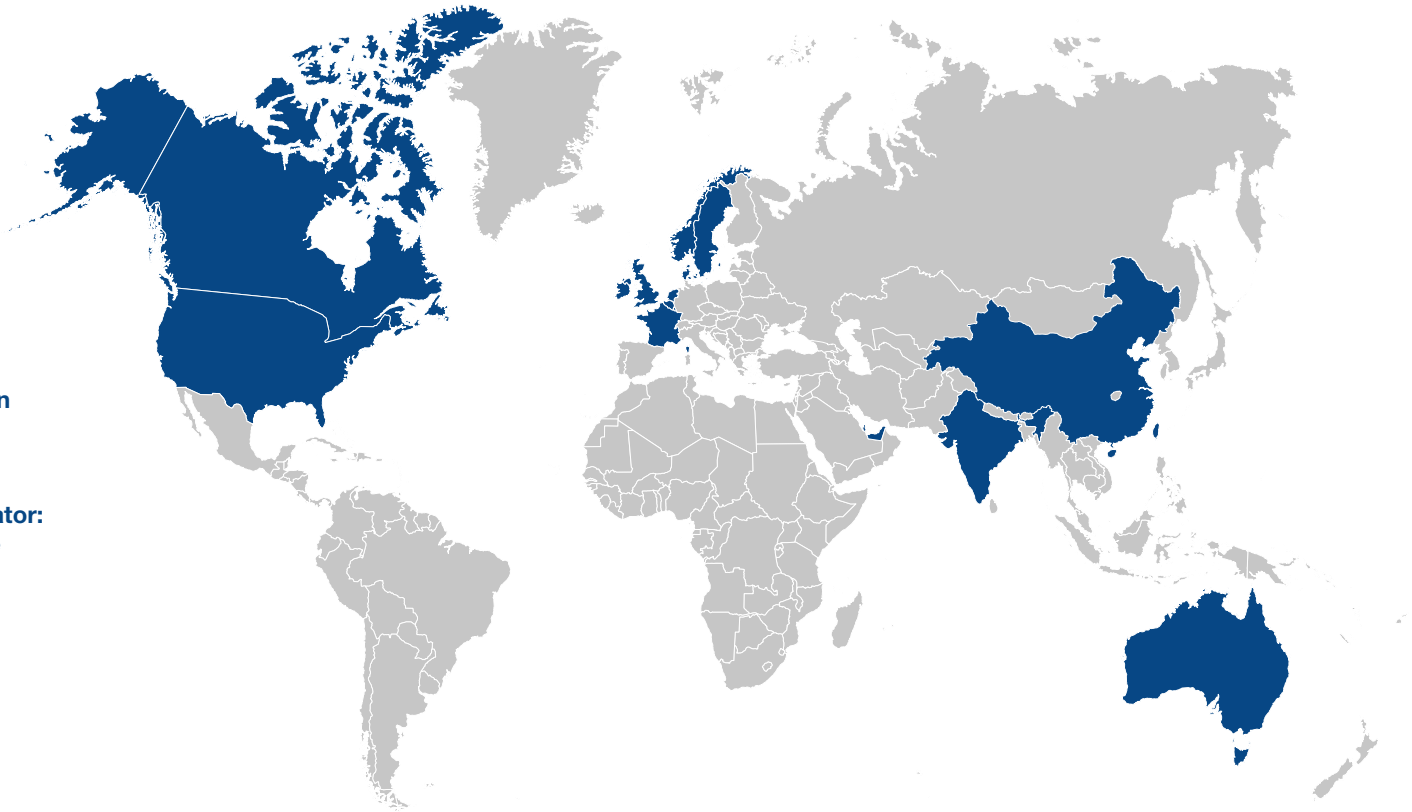
©Keolis

### IN BESANÇON: 4 TO 5 NEW CNG BUSES PER YEAR UNTIL 2024

**The Metropolis of Grand Besançon has launched the conversion of its bus fleet to NGV.**
It now has 34 buses, including 17 standard buses and 17 articulated buses. As part of the public service delegation (2018-2024) entrusted to Keolis, the local authority has planned to accelerate the transformation of its fleet with the acquisition of 4 to 5 new NGV buses per year until 2024.

# KEOLIS IN THE WORLD

**Group activities:** Keolis is a global leader in the shared mobility market, facilitating the journeys of millions of people every day.

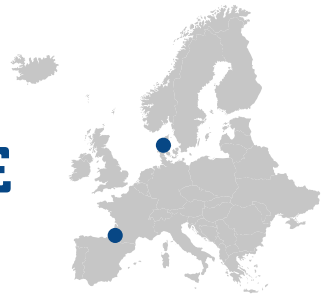


- **Pioneer and world leader in automated metros:**
  10 networks in 7 countries
- **World's leading tram operator:**
  27 tram networks worldwide

## KEY FIGURES 2022

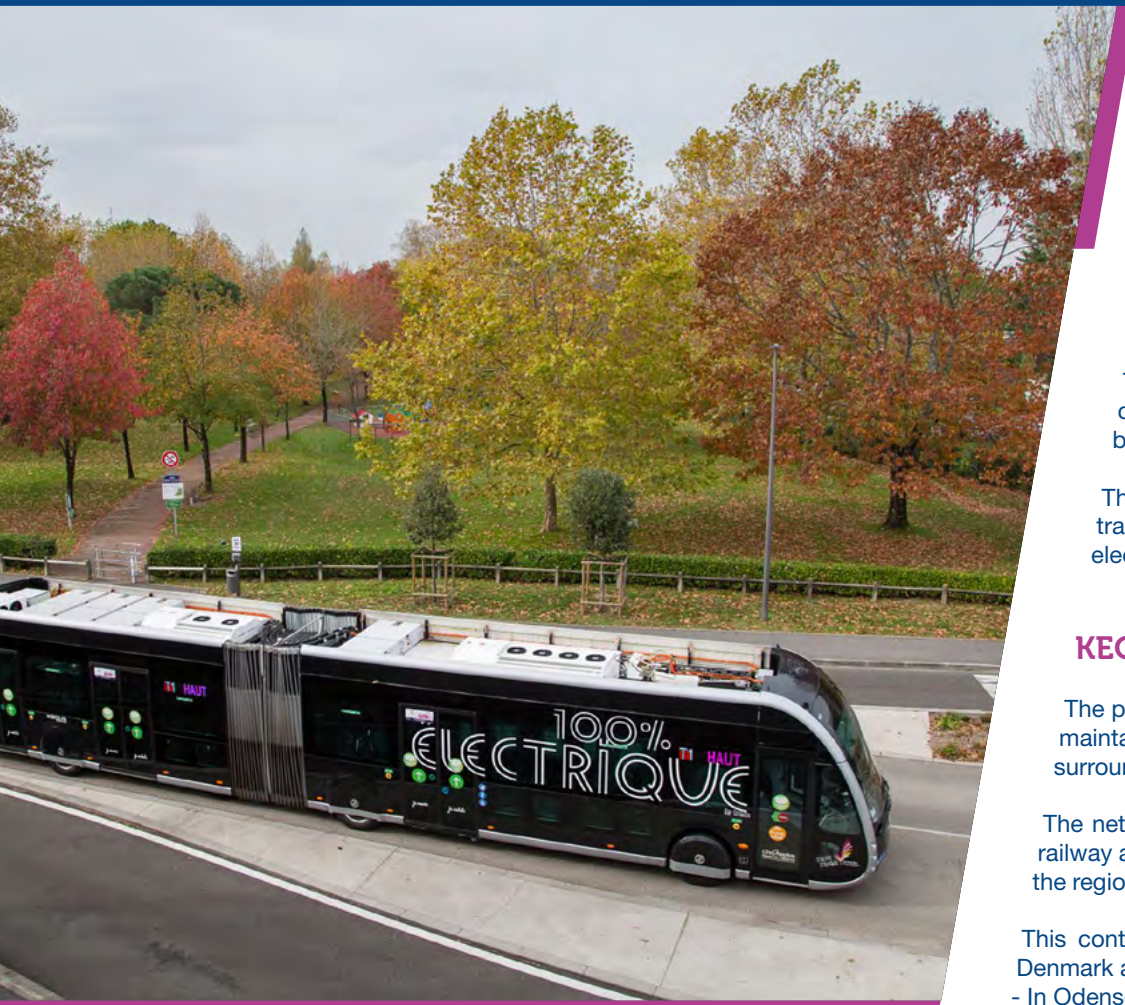
| 68 000 | 14 | 300 | 13 | 6,3 |
|---|---|---|---|---|
| employees worldwide | countries | public transport authorities | modes of transport operated on an intermodal basis | billion turnover (within 3 billion in France) |

# ELECTRIC BUSES FOR PERFORMING ALTERNATIVE MOBILITY



KEOLIS

## Change of air for urban transport




### KEOLIS LAUNCHES A SECOND 100% ELECTRIC BUS RAPID TRANSIT LINE ON THE BASQUE COAST

In April 2021, Keolis started operating the second 100% electric Bus Rapid Transit (e-BRT) line of the Chronoplus transport network, linking Tarnos to Bayonne, in the south-west of France, on behalf of the Basque Country Public Transport Authority SMPBA (Syndicat des Mobilités Pays Basque Adour). The first e-BRT line, linking Bayonne to Biarritz, entered service in September 2019.

The new line is 10 km long and features 24 stations and seven 100% electric vehicles which will carry approximately 90,000 passengers per month. This new line will increase the transport offer by 25% (more frequency) and with the objective of increasing ridership by 50%.

The launch of this new 100% electric line confirms SMPBA and Keolis' commitment to the energy transition. From now on, over 40% of the journeys on the Chronoplus network will be made on electric vehicles.

### KEOLIS ELECTRIFIES DENMARK

The public transport authority for Northern Denmark, awarded Keolis a new contract to operate and maintain a fossil free network of 31 buses in Northern Jutland, which notably covers Aalborg and its surroundings1.

The network consists of 31 vehicles and comprises seven routes, all of which are connected to the railway and bus station in Aalborg, the fourth-largest city in the country. The buses serve a large part of the region, which has a population of 500,000, and cover approximately four million kilometres per year.

This contract serves to strengthen Keolis' status as an operator of carbon-free public transport in Denmark and illustrates the Keolis Group's current dynamic in the country:

- In Odense, Keolis introduced a fleet of 20 electric buses in May 2021.
- In the Greater Copenhagen area, the Keolis Group started operating a network of 42 electric buses in June 2021.

# KEOLIS IN SWEDEN

## Keolis, first major public transport company in Sweden, running a 100% fossil-fuel-free fleet

© Keolis Sverige

**With the acquisition of 70% of shares of the Swedish bus company Busslink (former public control of the Stockholm network), Keolis has been present in Sweden since 2003.The company officially became Keolis Sverige in August 2010 after Keolis purchased the remaining 30% shares.**

Keolis is the second player in the Swedish bus market after Nobina.
As Sweden's first major public transport company, Keolis has boasted a100% fossil-fuel-free fleet since November 2015 as part of its commitment to supporting the country's sustainable mobility policy and reducing carbon emissions.

### TECHNICAL CHARACTERISTICS

In Stockholm, 36% of buses run on renewable, low-carbon biogas produced through treatment of the city's wastewater. The rest of the vehicles swapped diesel for biodiesel, bioethanol,biodiesel-electric hybrid engines or fully electric engines.
Keolis has obtained the certification ISO 9001 (quality) and ISO 14001 (environment).

### ECONOMIC AND/OR ENVIRONMENTAL PERFORMANCES

1600 buses *in operation in 5 regions : Stockholm region, Dalarna, Gothenburg, Karlstad and Uppsala, all running on fossil-freefuel. Bus fleet also consists of 42 electric buses in operation (approximately 90 additional buses will be in operation from mid-2023), 104 charging hybrid buses and 22 HVO-doubledeckers.

- Buses cover 84,9 million kilometers per year.
- 730,000 passengers carried every day.
- The rate for completed traffic is 99.9% (2020).

In Sweden since 2003 | Operations in 5 regions | Over 4,600 employees | Around 1600 buses | 84,9 million kilometres covered per year (2021)

# MAAS: TOWARDS SIMPLER MOBILITY FOR TRAVELERS

KEOLIS

## 4 examples: Dijon, Lille, Rennes and Netherlands

**The multiplication of transport modes is a real opportunity to make regions more dynamic. It allows everyone to access a mobility solution adapted to their needs.**

This is where Mobility-As-A-Service (MaaS) comes in. The goal is to provide passengers with a single interface, integrating all the offers and the necessary functions, from searching for an itinerary combining several modes of transport, to validating tickets, with a single customer account.

### THE REAL TRAVEL COMPANION

**I can travel "without borders"** by accessing all modes of transport – including regional trains, car parks and private or shared cars – and all their combinations and fares.

**I personalise my preferences** with my unique account: setting of favourites and access to coaching features.

**I have access to real-time information**, the next runs, availability of self-service bycicles or scooters, indication of comfort on board, or trac updates. I am alerted in case of disruption and I have access to alternatives.

**I always feel accompanied**, with or without the app: guidance, assistance in using the app, multichannel customer support (website, social media, sales or helpdesks at stations, network ambassadors and customer service call centres).

***IN DIJON***

*Under a strong umbrella brand - DiviaMobilités - Keolis operates all mobility solutions on the territory under the jurisdiction of the PTA: tram, bus, bicycle, carpooling and even parking (car parks and on road). The complete integration of offers and services is delivered, from design to operation, as well as the multimodal customer experience, with one aim: to make the most of the entire mobility offer and facilitate access to it for the greatest number of passengers. A service approach that naturally takes the form of a single sales agency, a single application and a single website, incentive-based multimodal fare offers or a single customer account with post-payment for all modes.*

***IN LILLE***

*ALL TRANSPORT SOLUTIONS WITHIN REACH ilévia is changing the way people travel. The app brings together all available modes of transport including self-service bicycles, on-demand services and the regional trains offer, which passengers can use with their ilévia ticket. It also provides route search and real-time passenger information, as well as the ability to buy and validate M-Tickets directly through the app.*

***IN RENNES***

*The Rennes Métropole MaaS project is based on "STAR, the app", which allows users to prepare their itinerary and buy tickets and subscriptions on the STAR network. It also provides access to the territory's mobility offers, such as self-service bicycle offers, carpooling and, very soon, regional trains and coaches entering the metropolitan area. From the start of the 2021 school year, passengers will benefit from attractive mobility passes – in terms of fare – but also in terms of simplicity for the passenger's journey: a single subscription will allow access to all services. This will be followed by a Mobility Coach to provide personalised assistance to passengers.*

***IN THE NETHERLANDS***

*The app deployed by Keolis allows passengers to plan their itinerary, make bookings and pay for their travel ticket for various modes, including national and regional train, tram, metro, ferry, bus (operated by Keolis or not), on-demand transport and self-service bicycle. The app even suggests walking itineraries for short trips or routes by car. It also indicates the locations of car parks, bike and car-sharing stations.*

# OUR PARTNERS


















We would like to thank our members who contributed to the publication of this document which highlights the French know-how in the world.

Graphic design: trente-fevrier@orange.fr - Print: Optimum Impression.

The IGD is **a public utility foundation which, for more than 25 years**, has brought together all the stakeholders in the management of public services.

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