



# SUPPORTING REGIONAL DEVELOPMENT



## Acting local

Improving access to public parks and open spaces for people with reduced mobility is just one aspect of the purchase order contract NGE has with the City of Bordeaux authority

**20%**

of Multi-expertise Region revenue is contributed by purchase order contracts

With its 13 Multi-expertise regions and 100+ locations in France, NGE has its finger firmly on the pulse of regional realities and development challenges. 2021 was a year of excellent progress and annual revenue in excess of €1 billion.

### CORE BUSINESS DIVERSIFICATION

Historically, our regions cover four main core businesses: earthworks and urban infrastructures, pipelines & other underground networks, civil engineering and roads. This Multi-expertise structure draws together all these specialist skills into a single management structure that benefits customer projects and the public interest. In 2021, our Regions continued to build stronger and closer synergies with the National Specialist Subsidiaries in terms of building construction, foundations, rail infrastructures and road equipment.



Plant engineering techniques at work in Nantes

### GE LAUNCHES A NEW LANDSCAPE CONTRACTING BUSINESS

“The new Landscape Contracting business was created in 2021 as part of the Group strategy of diversifying its activities, particularly in terms of quality of life and environmental risks. Its contribution to addressing these issues includes tackling the problem of heat islands, controlling soil erosion, and recycling topsoil not used in earthworks projects. The ultimate aim is to develop effective synergies with other NGE businesses (55% of landscaping projects are carried out by our Multi-expertise regions).





**THE FUTUROSCOPE ARENA, A TURNKEY PROJECT THAT SHOWCASES THE COMPREHENSIVE PACKAGE OFFERED BY NGE**

Delivered two months ahead of schedule in April 2022, the Futuroscope Arena near Poitiers combines multiple areas of Group expertise: funding under a public-private partnership structure, design, build and operation. For this impressive project, NGE used local companies for 72% of subcontracted work.

**ELECTRICAL ENGINEERING GAINS GROUND IN OUR REGIONS**

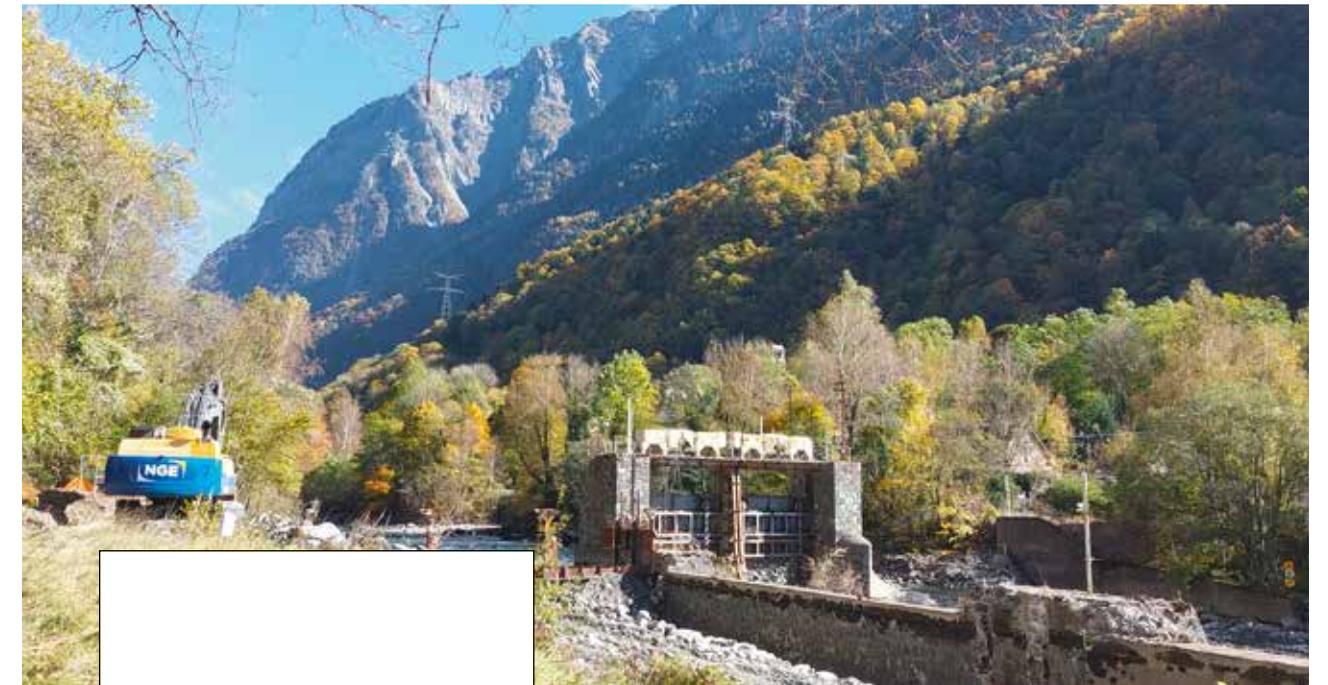
The NGE electrical engineering business covers low- and high-voltage overhead and underground supply lines, street lighting, traffic lights, fibre networks and electric vehicle charging points: the very definition of a local business delivering local services. It also has the advantage of complementing the range of rail signalling and catenary installation and maintenance services.

NGE won and renewed many electrical engineering contracts during 2021, including the external lighting for Strasbourg Cathedral and the City of Metz, and half of the electrification project in the Aude region. This expertise will soon be extended to all NGE Regions.



Lighting for the bell tower in the town of Lexy

For several years now, our Multi-expertise Regions have been investing in developing a new area of expertise: electrical engineering, the rollout of which is now accelerating to ensure that it become fully integrated into all 13 NGE Regions. Like sectors such as roads, pipelines and the development of public spaces, this sector is often associated with the purchase order contracts that offer the Group excellent visibility and stability. In 2021, 20% of regional revenue was generated by this type of contract. But our Regions also have many other levers for growth, from smart infrastructures to the development of funded projects, and the creation of waste recovery centres, with the aim of doubling the number of them in the coming years. Many projects also involve making improvements to community quality of life, addressing environmental issues, decontaminating soils, controlled demolition of buildings and structures, and increasing the permeability of ground surfaces, which often involves new planting and the renaturing of urban spaces. ■



A renaturing project in the Romanche river valley

**Restoring, safeguarding and maintaining**

Channelling rivers, decontaminating stormwater, preventing landslides and coastal flooding, as well as making emergency repairs and working with local communities to restore infrastructures. NGE applies all its expertise to containing risks and responding effectively to emergencies.

“The Romanche river valley project will deliver long-term benefits in terms of biodiversity and the physical appearance of the valley, and open up the possibility of new uses following the replacement of the six old hydroelectric stations by the new Gavet hydropower plant, which came on stream at the end of 2020”.



BASTIEN BOURDON, Project Manager at EDF Hydro

**RENATURATING A FORMER HYDROELECTRIC STATION SITE**

→ GAVET (38)

Following the shutdown of the old facilities and the startup of the new Moyenne Romanche hydropower scheme, NGE is helping to restore the ecological continuity of the Romanche river valley by renaturing the sites on behalf of EDF.

This project involves the managed demolition of the old hydroelectric stations, followed by the remediation of 4 hectares of land and 1 hectare of river. All the materials that emerge from the deconstruction process are sorted for recycling. NGE is reusing inert materials directly on site for backfilling the old power station foundations and cooling water intakes.

January 2023 is the target date for completion of all on-site work by NGE.

The dual-lobe tank that will treat stormwater runoff at the Champigny-sur-Marne wastewater treatment plant



**OPTIMISING EFFLUENT COLLECTION AND TREATING STORMWATER**

→ ÉPERNAY (51)

In 2021, NGE completed the holding tank at the La Faiencerie pottery in Epernay, which will collect stormwater and limit its overflow. The tank is engineered to cope with a 1-in-10-year extreme rainfall event. At 15 metres deep, the tank will capture and temporarily store stormwater to prevent drainage system overflow, and ensure that it is properly treated in the water treatment plant. Earthworks, civil engineering, hydraulic engineering... An operation involving multiple areas of NGE expertise.

**3,200 m<sup>3</sup>** storage capacity

**SAFE SWIMMING IN THE MARNE AND SEINE IN TIME FOR 2024**

→ CHAMPIGNY-SUR-MARNE (94)

The department of Val-de-Marne has launched its Swimming Action Plan to ensure safe swimming in the rivers Marne and Seine in time for the 2024 Olympics and Paralympics in Paris. NGE is making its contribution with the construction of a stormwater treatment plant at Champigny-sur-Marne. This environmentally essential facility involves a series of specialist techniques, including diaphragm walling, microtunnelling, civil engineering and water treatment. It will prevent flooding by collecting stormwater and protect the environment by removing all pollutants before discharging the treated water into the natural environment.

**8,000 m<sup>3</sup>** of stormwater storage

**DAM UPGRADING**

→ LE REVEST-LES-EAUX (83)

The Dardennes dam plays a key role in supplying the city of Toulon with drinking water. The work being carried out by NGE on behalf of the Toulon Provence Méditerranée urban community involves reinforcing its structure, increasing its outflow capacity and upgrading its mechanical facilities. The spillway is being widened to increase the dam outflow rate from 110 m<sup>3</sup>/sec. to 240 m<sup>3</sup>/sec.

This phase was completed during 2021. The project has now moved on to phase 2: the installation of a micro-hydropower plant and reinforcement works to the base of the dam. All the materials used in the first phase are being reused for the remainder of the project.

**240 m<sup>3</sup>/sec.** new spillway flow rate

The Dardennes dam, a crucial infrastructure for the supply of drinking water to the city of Toulon



**ERASING ALL TRACES OF STORM ALEX AND PREVENTING FUTURE RISK**

→ THE ROYA VALLEY (06)

After being devastated by storm Alex at the end of 2020, the Roya valley was cut off from the world. Despite the challenging conditions, the teams of NGE have been working flat out on several fronts since the beginning of the emergency to restore vital road and rail links and ensure their future safety. 2021 marked the end of some aspects of the work, while others remain ongoing. At the end of the year, the teams also began work on restoring the road at Casterino in the Merveilles valley.



Above ▼

a spider excavator conducts the first exploratory surveys in Casterino

Below ▲

8,000 linear metres of consolidation anchors were used to build a 70-metre long, 15-metre-high soil nailed wall to protect an SNCF blind arched wall carrying the Breil-Tende rail line



**SAFETY WORKS FOR A CUTTING ON THE LGV EST LINE**

→ LUPFLEMATT (67)

NGE carried out remedial works on behalf of SNCF Réseau following a landslide in a cutting on the LGV Est high-speed rail line. The work to reinforce and stabilise the cutting over a 400-metre stretch of track was carried out without interrupting rail services, but with trains operating at reduced speed. The 150,000 m<sup>3</sup> of material excavated will be partially treated with lime and binder, and backfilled onto a drainage blanket.

# Harnessing the energy of water



Temporary sluiceways allow water from the Sanaga River to flow through the site during construction of the Nachtigal hydropower plant in Cameroon

**KEY INFORMATION - THE NACHTIGAL HYDROPOWER PLANT**

**7**  
60 MW turbines

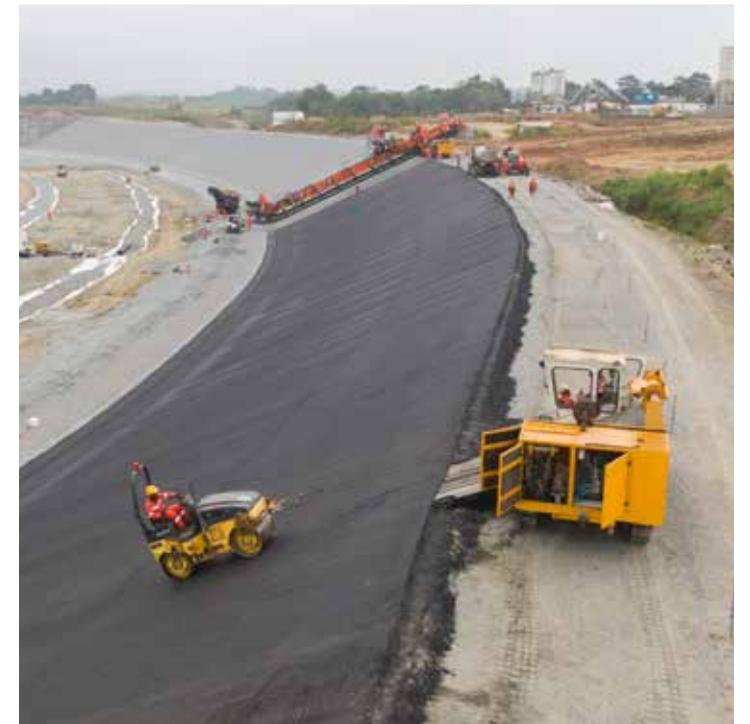
**60%**  
complete by the end of 2021

In Cameroon and Côte d'Ivoire, NGE is building and upgrading dams that play an essential role in the national economies and everyday life of both countries.

**NACHTIGAL, A DAM IN THE MAKING**

Once complete, this hydropower plant on the Sanaga River will accelerate the process of bringing electricity to all 27 million residents of Cameroon, and help to accelerate its economic development. At full power, it will generate 420 MW of electricity, or 30% of Cameroon's total power demand. It will also provide consumers with green and competitively priced energy. The project includes a main dam, an upstream intake, an inflow channel, a downstream intake, 7 penstocks and a power generating plant.

The consortium led by NGE as lead civil engineering contractor for the Nachtigal upstream development project has now completed a series of key stages, including the installation of the asphalt production plants, the earthworks for the power channel and the installation of the five plant suction pumps, and begun work on the embankments for the power channel. Here, the teams are using a huge 35-metre-long beam paver to apply the asphalt surfacing that will seal the embankments of the power channel that will carry feed water from the Sanaga River to the hydropower plant. The decision to use asphalt as the surfacing material was based on the significant time saving compared with traditional concrete-based methods, and the fact that this solution would make the dam more watertight. Developed by NGE and used for the Curbans canal in France, the beam paver was extended by Allcons Maschinenbau in Germany before being shipped to Nachtigal. This XXL beam paver sets a new world record for application table length.



The 35-metre beam paver applies waterproof surfacing to the Nachtigal Dam power channel



**A SECOND LIFE FOR THE SOLOMOUGOU DAM**

More than 600 km north of the Côte d'Ivoire capital of Abidjan, and 20 km south-west of Korhogo, the Solomougou dam is being fully regenerated. Built in the 1970s, the dilapidated state of the structure was making it difficult to operate. NGE is responsible for repairing and upgrading the dam and its surrounding 400-hectare area, which will be extended by a further 410 hectares to provide land for farmers. This regeneration and expansion project is giving new impetus to the local economy.

**400 hectares**  
regenerated

**410 hectares**  
of extension land