



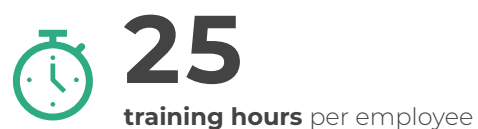
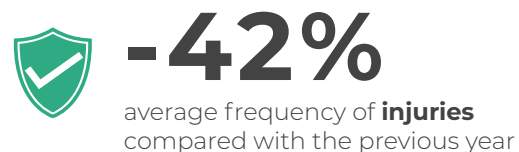
# *Sustainability Report*

## *2019*





# Highlights 2019



## Letter to stakeholders

**Sustainability** is a term that appears innovative to my generation yet, without knowing it, in our Company its meaning has been carried forward, with dedication, for decades: caring for people, attention to the health and safety of our workers, respect for the environment and local communities have always been priorities in Ghella.

**Today** we face, as inhabitants of this planet, the necessity to remedy the unsustainability of our own ambition. The world of construction is in constant contrast: a precarious balance between **nature** and **engineering genius**.

The two realities must coexist in **harmony**.

**Our commitment** has adapted to the significance of the **challenge that awaits us**.

2019 was an important year for sustainability in Ghella. On the strength of our **experience**, we have embarked on a structured path towards the **continuous improvement** of sustainability performance, shared for the first time in a corporate **Sustainability Report**.

We started with **people**: the first step was to listen to the expectations of our stakeholders and reflect them in our priorities. Then, we developed the **three-year Sustainability Plan**, a strategic tool that defines our goals, and strengthened our internal Governance to promote a **sustainability culture** throughout the Company.

For years Ghella has been carefully identifying targeted projects and I believe that time has proved us right. 92% of our 2019 work portfolio consists of projects that contribute to the advancement of the United Nations **Sustainable Development Goals**. **Tunnels** are considered the future of urban centres and of major rail links and this makes us active players in the transition towards **sustainable mobility**.

We create **durable works** that have the **least**



possible impact on the **environment**.

Our people grow with us and pass onto the youngest the **ethics** and **technical skills** that distinguish us. The safety of our workers is a top priority. In 2019 we recorded a 42% **decrease in the frequency of injuries**, compared to the previous year.

Our wide international presence allows us to transfer technical knowledge and bring innovation and value where we operate, in the interest of local people and communities, generating value for all stakeholders.

**The future is all to be designed:** only through a sustainable development will we be able to offer a better world to future generations.

Enrico Ghella  
Chairman & CEO  
**Ghella SpA**





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# Company

## Profile

### COUNTRIES

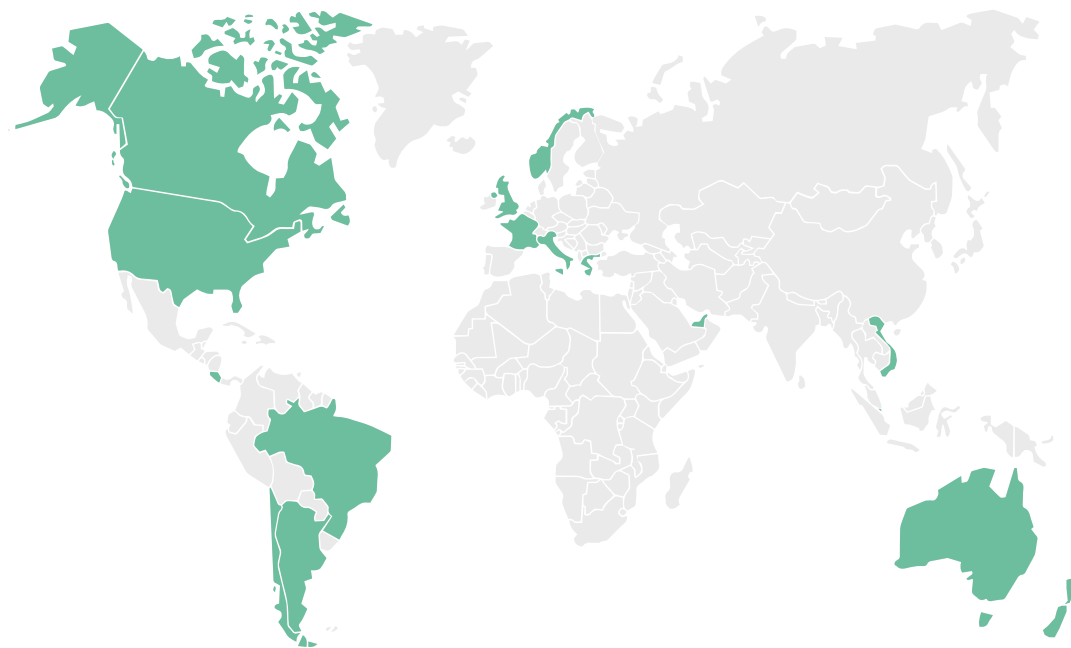
15

### LANGUAGES

24

### ONGOING PROJECTS

16



Our presence in the world (offices, branches, subsidiaries and production units)

### ROADS & MOTORWAYS



>15

Motorways

### RAILWAYS & METRO



>34

Railway lines

### WATER



>20

Hydraulic works



>300

km of roads



>14

Metro lines



>10

Hydroelectric plants



Vietnam, Hanoi,  
Photo by Francesco Neri from the photographic project  
"Di roccia, fucchi e avventure sotterranee"

Founded in 1894, **Ghella** is a leading company in the construction of major infrastructure projects worldwide.

**Specialized in underground works**, we are active in the construction of infrastructure projects such as subways, railways, motorways and hydraulic works.

The headquarters of the Company is in Rome, but the largest production is concentrated abroad mainly in **Oceania**, the **Americas**, **Europe** and the **Far East**.

The use of **advanced technologies**, the continuous training of our people, the development of **innovative construction methods** combined with a particular attention to **safety and respect for the environment**, allowed us to carry out complex engineering works, contributing to the dynamic and steady growth of the Company as well as to the economic and social development of the territories where we operate.

Alongside the infrastructure sector, we are active in the **renewable energy sector** with the development, construction and operation of energy plants from renewable sources, mainly photovoltaic and hydroelectric, in Italy, Central America and the Middle East.

### PHOTOVOLTAIC



1.125

MW in operation

Production data as of June 2020.

### PRODUCTION

#### KM EXCAVATED

~210 KM using TBMs

~135 KM using traditional methods

~12 KM using pipe jacking

### TUNNELS



39

TBM tunnels



>100

Traditional excavations

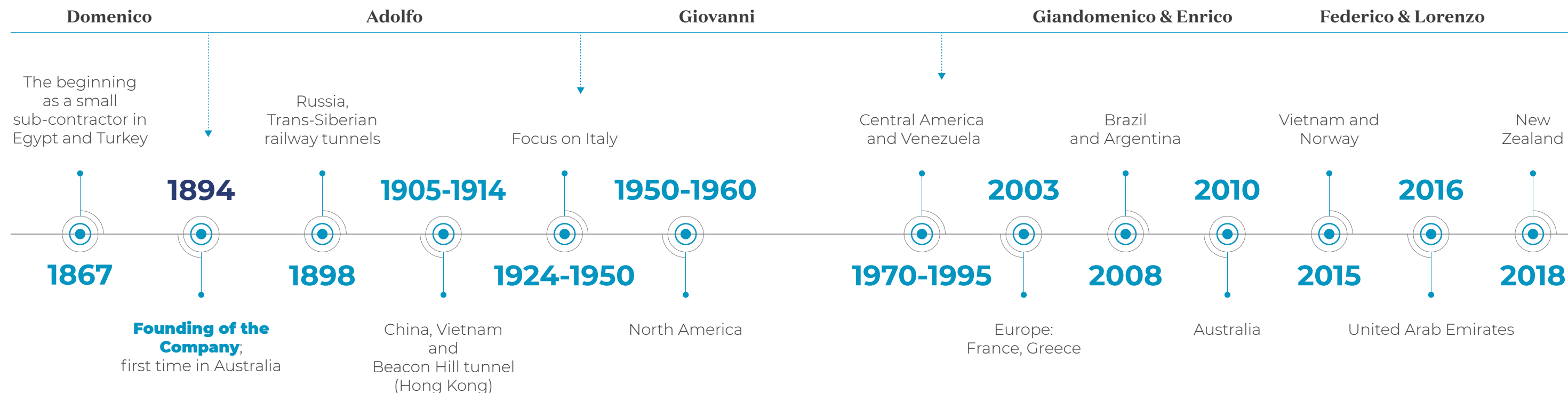






Russia,  
Transcaucasian Railway

# History and tradition



Since its foundation, more than 125 years ago, Ghella has witnessed modern history through **five generations**. Ghella was able to transfer knowledge and expertise, engineering talent and curiosity. Each generation has embraced its present by overcoming difficult challenges.

The Ghella company was founded in **1894**, however the first construction site in which the forefather of the family, **Domenico Ghella**, took part, dates back to 1867: after his beginnings in France as a miner, Domenico arrived in Egypt to contribute, with his small company, to the construction of the Suez passage. From there he then moved to **Turkey**, where he participated in the construction of the Pera-Galata funicular tunnel in Istanbul, before returning to Italy in 1877, the year his son **Adolfo Ghella** was born.

Domenico passed on to Adolfo the passion for his work, his entrepreneurial spirit and the values on which Ghella is still based today: **ethics, respect for people and cultural diversity**, valuing **tradition and innovation**.

In the last years of the 19th century, Adolfo contributed to the construction of works that have become legendary, such as the Trans-Siberian railway. In 1905 he reached Indochina, to then move to **Hong Kong in 1907**, where he completed the construction of the **Beacon Hill**

**tunnel** on the Kowloon - Canton railway-line, at the time the longest in China.

In 1909, he was awarded a contract in **Kowloon Harbour**, part of Hong Kong's Victoria Harbour, one of the busiest ports in the world and the nerve centre of the city's economic activities. In 1910 Adolfo returned to Italy where he married Domenica. In 1912 Domenico Ghella was born, their eldest son.

Ghella in the meantime had become an **internationally renowned company**.

World War I started when the Ghella family was in **Russia**, where they had settled to build the railway lot between Kars and Erzerum. The following decade was difficult for the company, but thanks to the experience gained by Adolfo and his willpower, from 1924 the business flourished again. It was a hectic period, where Adolfo won numerous contracts in his country of origin, **Italy**.

Ghella was assigned the construction of the most difficult part of the **Rome metro**, the section between Via Cavour, San Pietro in Vincoli and the Colosseum: a true masterpiece of audacity, tenacity and ability. Construction activities were suspended in 1940 because of the **Second World War**.

In 1944 Giovanni's first son, **Giandomenico Ghella**, was born. Giovanni was Adolfo's second son. Starting from 1946, Giovanni and Domenico began to relieve Adolfo of the most burdensome part of the work.

The work of the company was constantly growing: hydroelectric plants, railways, motorway lots, structural reinforcements were built, all characterised by the high levels of technical skill required and with a prevalence of underground works. From the Alps in the North to the Calabrian Apennines in the South, **Ghella contributed to the construction of the new skeleton network of Italy**.

In 1951 **Enrico Ghella** was born, brother of Giandomenico, Marina and Manuela. The last of the four siblings of the fourth generation, today **Chairman and CEO of the Group**.

The 1950s and 1960s were the years of the expansion to **Canada** and the **United States**, when the company went through a brief critical period, which was overcome thanks to the work and dedication of the brothers Giandomenico and Enrico. In 1968, Ghella carried out, as a subcontractor for one of the major Italian companies, the construction of a tunnel of the Peschiera Aqueduct in Moricone, Rome, using a TBM (Tunnel Boring Machine), one of the first construction companies to invest in such **technology**.

In the 1970s a new partner joined the Ghella family: **Domenico Nigro**, a man of utmost trust for Giovanni Ghella and a person of great experience.

In the late 1970s, the company worked for the first time in **Venezuela**. In 1979 works began on Line 1 of the Caracas underground in the section between the Capitolio and La Hoyada stations, and from that moment on, a large number of works were carried out in parallel between Italy and Venezuela.

It is thanks to far-sighted investments in new technologies that Ghella has been a **pioneer in mechanised excavation techniques** ever since. The following years saw an exponential growth in Central and South America, due to the technical skills and a quality-focused approach, typically Italian: the company opened work sites in **Venezuela, the Dominican Republic, Guatemala, Honduras, Haiti and Costa Rica**.

**Federico** and **Lorenzo Ghella**, sons of Giandomenico, were born in 1976 and 1980 respectively. With them, Ghella reaches the **fifth generation of constructors specialised in underground excavations**. Today Federico and Lorenzo are Deputy Chairmen of the Group.





# Corporate Governance

Ghella is an unlisted indirectly owned company limited by shares (SpA), whose shares are owned 70% by Ghella Group Srl and 30% by Geo 2007 Srl.

## CORPORATE STRUCTURE

While remaining a family business, the Governance model adopted by Ghella has developed over time in line with its continuous expansion into new markets at an international level.

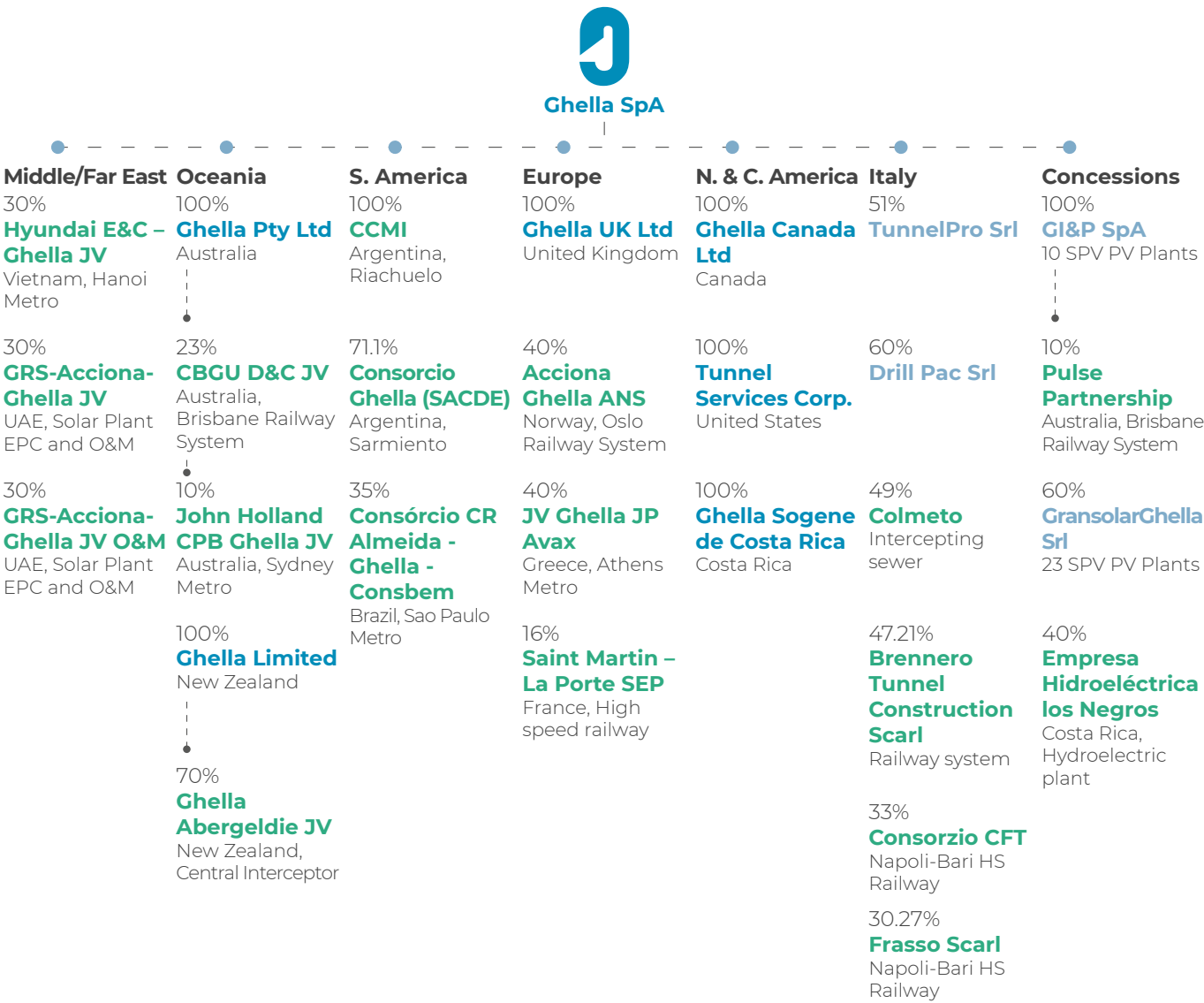
The Governance structure of Ghella SpA provides for the presence of bodies such as the Board of Directors, the Board of Statutory Auditors, both appointed by the Shareholders' Meeting, the External Audit Firm and the Supervisory Body pursuant to the Italian Legislative Decree 231/01, appointed by the Board of Directors.

## BOARD OF DIRECTORS

Enrico Ghella	Chairman & CEO
Federico Ghella	Deputy Chairman
Lorenzo Ghella	Deputy Chairman
Giulio Grimaldi	Board Member
Alberto Nigro	Board Member
Marco Tummarello	Board Member

## BOARD OF STATUTORY AUDITORS

Stefano Chirichigno	
Riccardo Gabrielli	Chairman
Alberto Santi	Standing Member
	Standing Member



Ghella's corporate structure

Ghella SpA has a **Board of Directors** (BoD) composed of 6 Directors, not all of them being shareholders, aged between 40 and 70. The BoD appointed a Chairman and Chief Executive Officer, Enrico Ghella, and two Vice-Chairmen, Federico Ghella and Lorenzo Ghella. The Board of Directors, as an administrative body, has the broadest ordinary and extraordinary administration powers over the company and has the right to perform all the actions it deems appropriate to achieve the corporate purposes, excluding only those that the law strictly reserves to the Shareholders' Meeting.

The **Board of Statutory Auditors**

is the internal control body supervising compliance with the principles of correct administration, as required by the Articles of Association of Ghella SpA, and is composed of three standing members and two alternates, appointed and effective pursuant to the Italian Civil Code.

The audit activity is carried out, as required by current legislation, by an **External Audit Firm** included in the special register, appointed by the Board of Directors.

In implementing the provisions of Italian Legislative Decree 231 of 2001, Ghella's Board of Directors

has also established a **Supervisory Body**, composed of three external members, which is renewed every three years and is currently in office.

The **Compliance and Sustainability Function reports to the Corporate Strategy Director**, also Deputy Chairman of the BoD, and is tasked with coordinating the Sustainability activities integrated into the various company processes, supporting the top management in identifying areas for improvement, producing the annual Sustainability Report and guaranteeing alignment to international best practices.



Photo by Alessandro Imbriaco from the photographic project "Di roccia, fuochi e avventure sotterranee" Australia, Sydney.

# Management System

Being present in many culturally different countries, we have adopted an **Integrated Management System** for Quality, Environment and Health and Safety at Work with a Multi-site structure. This reflects the standardised organisational and operational approach of Ghella and guarantees, to the individual local units, the organisational autonomy necessary to comply with local legislation and Clients' requirements.

Company principles and guidelines are communicated to internal and external stakeholders through our website, while procedures are shared internally with each work

site via the company intranet.

The system is certified in accordance with the international standards **ISO 9001: 2015**, **ISO 14001: 2015** and **ISO 45001: 2018**, which guarantee the management and control of processes within the Quality, Environment and Safety frameworks and support us in their continuous improvement.

The System applies to all Ghella activities carried out in 100% of our operating sites. In case of activities relating to sites where we operate in Joint-Venture ("JV"), the Management System is studied *ad hoc* starting from the Management Systems of each partner. In this case,

Ghella participates in the design of the shared system to ensure that our principles and rules are fully integrated in the JV system.

## RELATED LINKS



Ghella site, Ethics & Compliance



Ghella site, Our way





## Rome metro

*In the 1930s **Adolfo Ghella** possessed a rare expertise in the **construction of underground tunnels**. His knowledge, gained over decades of work around the world, was crucial for the construction of a pivotal work in Italy: the Rome metro. The works began in 1938 and Adolfo was assigned the most difficult part, the excavation between via Cavour, San Pietro in Vincoli and the Colosseum. In two years, he completed the 1.6-kilometre tunnel between Termini and the Arch of Constantine, a true masterpiece of technical skill and high engineering in a densely populated area, rich in buildings on the surface and archaeological remains underground.*

*The construction works started in the Colosseum station, but Adolfo was forced to interrupt them due to the outbreak of the Second World War: at that point **he moved on to designing and building a series of tunnels and anti-raid shelters** throughout the city, capable of accommodating more than 50,000 people.*

Italy, Rome  
Construction of the Rome metro | Piramide-Colosseo metro-line



# Our Sustainability Journey

**VISION** LEAVE A BETTER WORLD TO THE NEXT GENERATIONS

**MISSION** BUILD EXCELLENCE IN A SUSTAINABLE AND INNOVATIVE WAY

Our Sustainability journey starts from the **Vision** of the future that we want to build by sharing our business choices: a better world for the **next generations**.

We are aware that the realisation of this vision can only be the result of the collective action of multiple players: governments, organisations, companies and civil society. This is

why we have placed at the centre of our daily actions a corporate **mission** aimed at maintaining our history as 'constructors of **excellence**' on a path of **innovation** and **sustainability**, and a clear set of **values** aimed at guiding the behaviour of all of us.

The company Vision and Mission both aim at Sustainability because

the intent we pursue is the **integration** of its principles in all aspects of 'doing business': from the **choice** of targeted projects, to the way we **carry out** our works, in corporate as well as site processes.



New Zealand, Auckland.  
Planting day joined by site staff and community members organised by the client Watercare  
Photo by Simon Runting

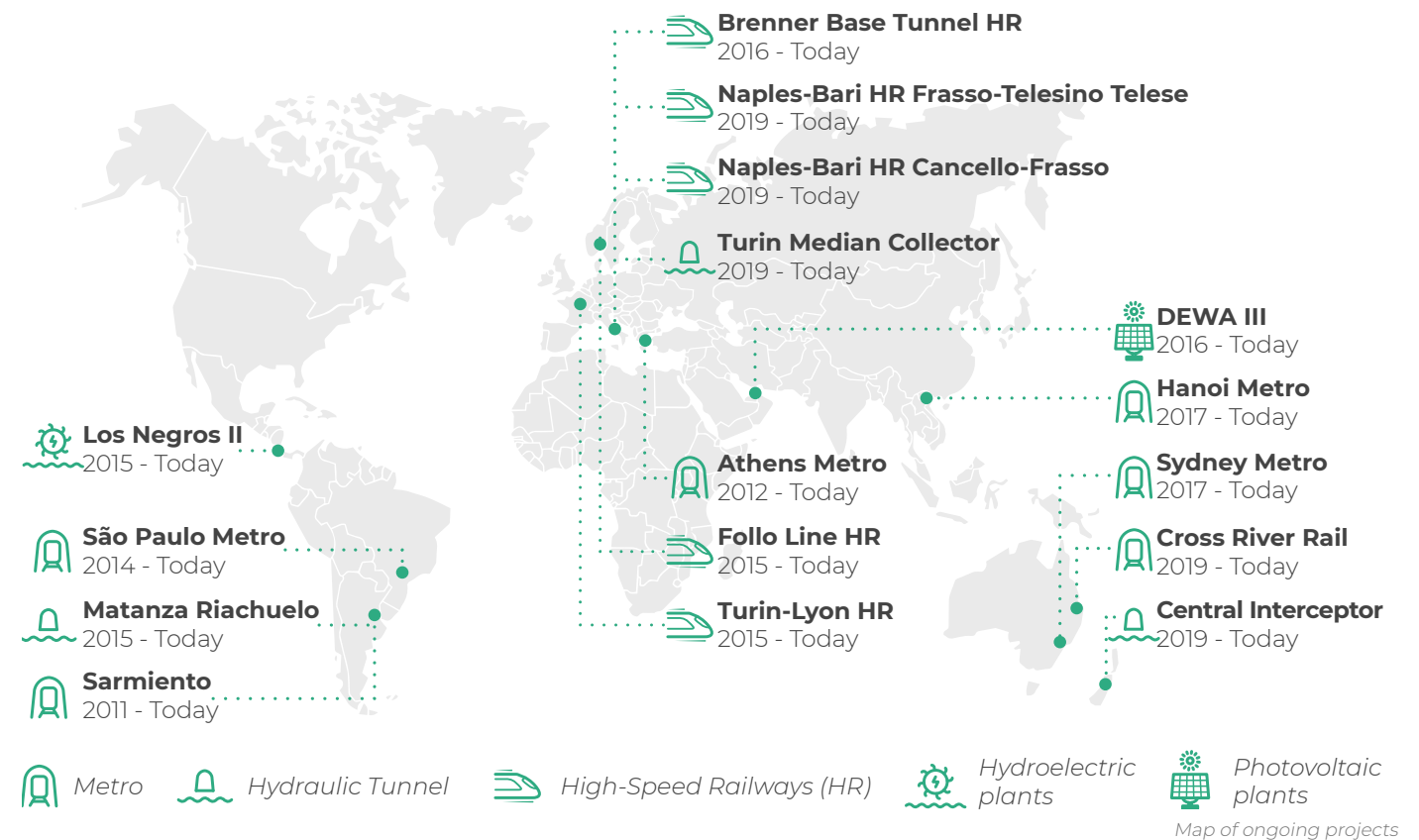
*"It's no longer just a question of building and operating sustainable infrastructure but building infrastructure that enables more sustainable lifestyles and economies"*

**Ainsley Simpson**

CEO ISCA, Infrastructure Sustainability Council Australia

*Projects: long-term benefits for people and the environment*

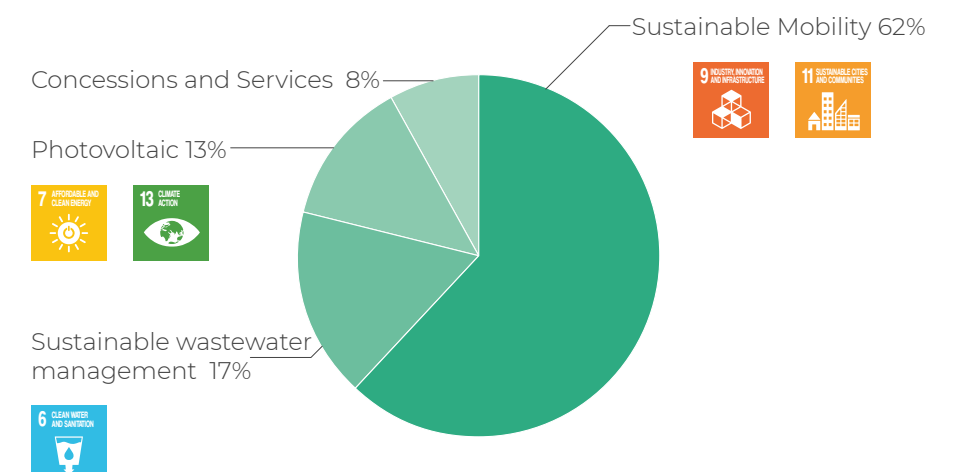
Our work represents an important part in the construction of complex **infrastructural works** that contribute to the **development** and **progress** of the countries where we operate.



## PORTFOLIO OF WORKS BY ACTIVITY

Our choice of tunnelling projects, mainly focused on railways, metros and hydraulic systems, has positive sustainability effects visible in the long-term benefits that we to help create for local communities and for the environment.

On a global level, our projects contribute to the advancement of the SDGs, the goals adopted by the United Nations in the 2030 Agenda for Sustainable Development.





## SUSTAINABLE MOBILITY

Our railway construction works, such as the **Brenner Base Tunnel** or the new **Naples-Bari High Speed Railway**, facilitate a modal shift from road to rail. We work on strategic routes of national and international transport, **improving the mobility** of people and goods and generating positive externalities on local air quality, Climate Change and on the consumption of resources, due to the reduction of emissions and fossil fuel consumption associated to transport.

Our project at Saint Martin La Porte for the **Turin-Lyon railway line** represents another example of works that generate benefits associated to the reduction of road transport. In this case, the railway link is located at the intersection of two major European connection axes, North-South and East-West, therefore playing a particularly crucial role for the transport of goods and people. The cost-benefit analysis conducted by our client TELT on the Turin-Lyon line estimates that the construction of the new line will lead to an **annual reduction in greenhouse gas emissions** equal to  $\approx 3$  million tCO<sub>2</sub>eq, equal to those produced by a city of 300,000 inhabitants. This is thanks to the shift of about 1 million heavy vehicles from road transport to railway.

Other projects such as **Follo Line** in Norway, which will halve the travel time between Oslo and the satellite city Ski, enhance the existing railway transport, making it more competitive in terms of journey times and travel quality and therefore reducing city traffic due to commuting. The ramifications of this project extend also to the urban planning sphere, and in particular to the decongestion of the Norwegian capital, thanks to the improved connection with nearby Ski and the possibility offered to the inhabitants of Oslo to reside outside the city while being able to commute with a pleasant travel experience.

All our European projects in the railway sector are part of the **Trans-European Transport Network (TEN-T)**: a set of integrated transport infrastructures planned by the European Community to support the single market, guarantee the free movement of goods and people, decrease the use of road transport and strengthen the growth, employment and competitiveness of the European Union. Our Follo Line project in Norway, the Brenner Base Tunnel and the Naples-Bari High Speed Railway are included in the Scandinavian - Mediterranean Corridor and the Turin-Lyon High Speed Railway is included in the

Mediterranean Corridor project of the so-called 'European metro'.

The projects we carry out in the **metro sector**, such as the ongoing

### The Brenner Base Tunnel: "project zero" hypothesis

*Once completed, with its 55 km between Innsbruck and Fortezza, the Brenner Base Tunnel will be the longest underground railway connection in the world. In addition to offering an alternative to road transport currently used for the North-South connections between Austria and Italy, the new line will reduce travel time by 55 minutes compared to the existing railway connection. This will be achieved by eliminating the steep slopes of the current line and allowing the use of longer trains and with an increased freight load capacity, which will require less power and energy.*

*Our client BBT produced an estimate for the reduction in CO<sub>2</sub> emissions associated with the new transport offer deriving from the construction of the tunnel. The analysis used traffic scenarios and included an estimate of the amount of CO<sub>2</sub> associated with the construction phase, therefore considering the so-called "zero project hypothesis". A time of about 14 years has been estimated\* to offset the CO<sub>2</sub> emissions associated with the construction of the Base Tunnel, with a subsequent CO<sub>2</sub> saving of about 200,000 tons per year.*

Sydney Metro City and Southwest project or the recently completed excavation works for Line 3 of the Athens Metro and for Pilot Light Line 3 of the Hanoi Metro, are aimed to improve urban mobility infrastructures in densely populated cities, contributing to the reduction of direct and indirect emissions related to the use of cars.

The **Sydney Metro City & Southwest** project consists of 15.5 km of new underground twin tunnels, passing under the bay at up to 40 meters below sea level, and the construction of 6 stations for the new metro line, some of which in the City Business District, the beating heart of the economy of the Australian capital. Our client Sydney Metro has estimated that the work will bring a 71% increase in the number of journeys made in the morning rush-hour and a travel modal shift from car to metro of 20,000<sup>1</sup> trips during the rush hour by 2036, thus significantly reducing city congestion. Other benefits concern the reduced overcrowding of trains and the quality of commuting offered to passengers.

Once completed, the extension of **Athens Metro** to Piraeus will serve about 132,000 passengers per day. With the new line it will be possible to go directly from Athens International Airport to the port of

Piraeus in 45 minutes. Our client Attiko Metro has estimated that in that area there will be an average reduction of 23,000 vehicles per day, with a daily reduction of about 120 tons of CO<sub>2</sub>eq<sup>2</sup>.

In addition to the technical challenges related to the different geological formations encountered during the excavation, during the works we managed significant archaeological findings and

contributed to the discovery of important remains now preserved in the State archives and which will be partly exhibited within the metro stations, making these into open underground museums for passers-by.



Greece, Athens,  
Photo by Marina Caneve from the photographic project "Di roccia, fuochi e avventure sotterranee"

### HYDRAULIC INFRASTRUCTURES

Our **hydraulic tunnels** for wastewater systems, part of the Matanza Riachuelo project in Argentina and the Central Interceptor project in New Zealand, contribute to the improvement of local living conditions and environmental impacts.

The **Matanza Riachuelo** is one of the most important water sanitation projects globally. It will significantly reduce the pollution of the Rio de la Plata, one of the most polluted

rivers in the world, and improve the quality of life of the local population. The project is part of the Matanza-Riachuelo Basin (MRB) Sustainable Development Project, financed by the World Bank, which affects about 7 million people, 10% of whom below the national poverty line.

In 2019, our **Central Interceptor** project started in New Zealand. With its 14.7 km excavated, it will be the longest tunnel in New Zealand and will reduce by 80% the spills

of Auckland's wastewater in the Waitematā Harbour and Manukau Harbour, generating a significant improvement in environmental conditions and biodiversity in the bay. In addition, the new sewerage system will be sized to serve the rapid expansion of the city of Auckland, which is expected to grow by one million over the next 30 years.

### RELATED LINKS



\*BBT Info, "Bilancio della CO<sub>2</sub>"



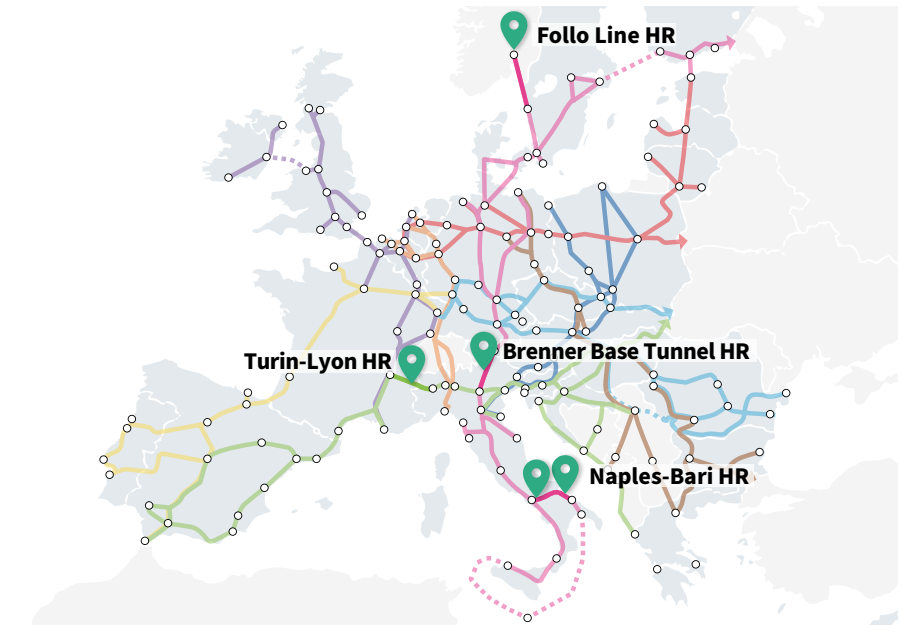
TELT, Sustainability Report 2018



Attiko Metro, "Athens Metro - Line 3 Metro extension to Piraeus"



The World Bank, "Significant advances in the recovery of the Matanza-Riachuelo."



Our projects for the Trans European Network (TEN-T)







New Zealand, Auckland, Central Interceptor, Photo by Simon Runtig

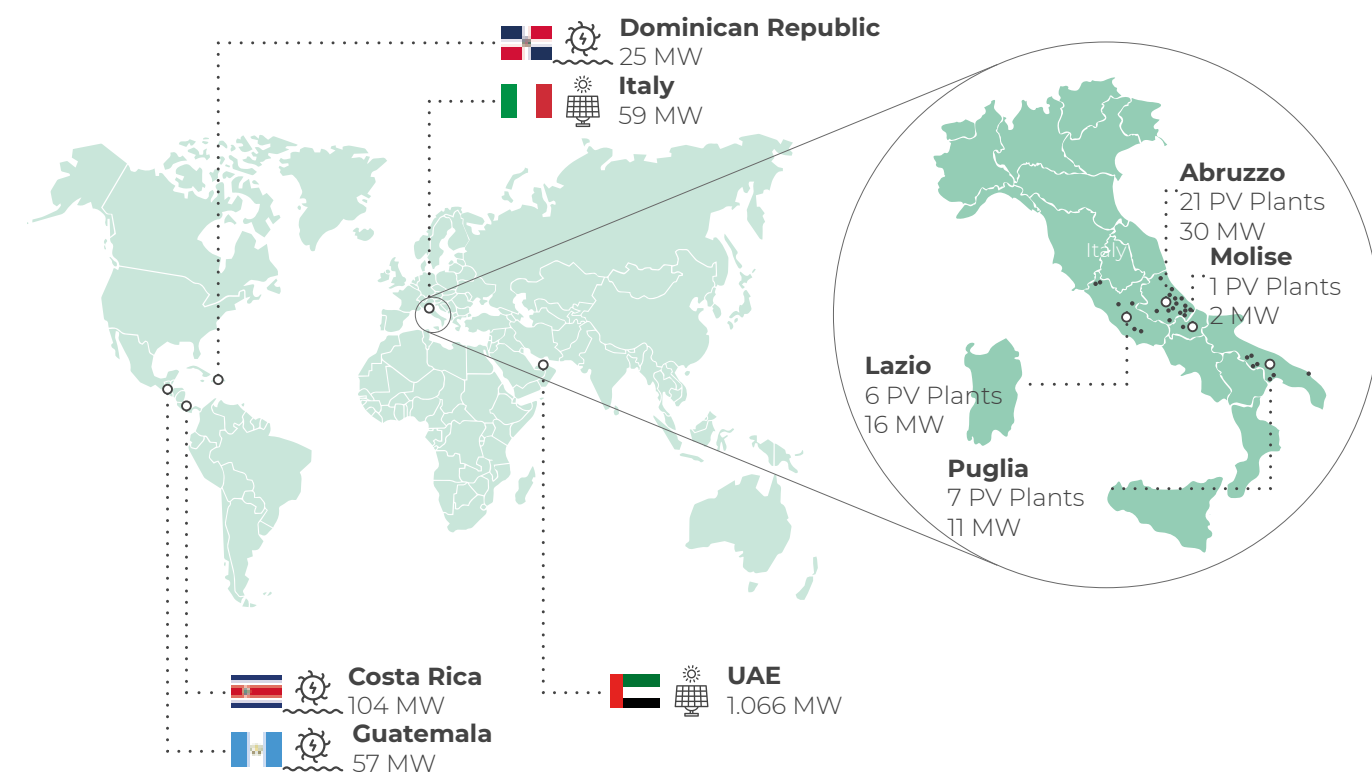
## RENEWABLE ENERGIES

In addition to contributing to large public infrastructure works, we operate in the **renewable energy sector** through the development, construction and operation of energy production plants from renewable sources, mainly photovoltaic and hydroelectric, in Italy, Central America and the Middle East.

In Italy, we have installed a total power of 59 MW in **photovoltaic** plants owned by Ghella, producing about 88 GWh on average per year. In the United Arab Emirates, with the DEWA Phase III PV Solar Power

Project, we have contributed to the construction of a 1,066 MW power plant with a construction, operation and maintenance contract (EPC and O&M), for an average annual production of 2,000 GWh. The plant included the installation of 3 million photovoltaic panels over about 20 square kilometres of desert areas.

We have built **hydroelectric** plants for a total of 186 MW of power, of which 141 MW in construction-only contracts in Costa Rica, Guatemala and the Dominican Republic and 45 MW in EPC and O&M contracts in Costa Rica.



Renewables projects

## Creation of shared value

Our projects have been designed to leave a **lasting legacy** to the population of the areas where we operate, facilitating the transition to increasingly sustainable lifestyles.

As the company executing these works, our role is focused on the **quality** of the realisation through technical **excellence** and

**innovation**, and on the reduction of the environmental and social impacts associated with the construction phase, in a context of value creation for the territory and local communities.

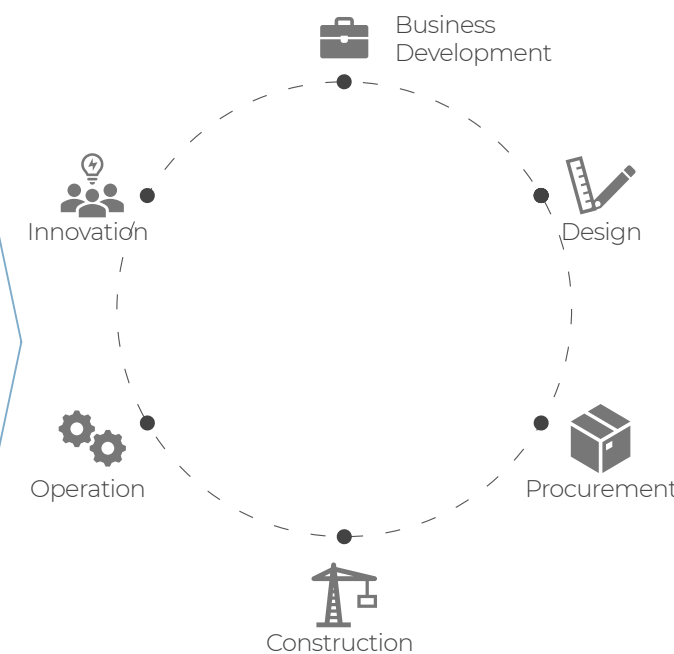
Our value chain is at the centre of a virtuous circle in which resources, such as personnel, raw materials or supplies, through our processes contribute to the creation of **shared value**<sup>2</sup>, for the company and for society. Hence, the creation of **economic value** for the company becomes a driver for **social well-**

**being** through the construction of durable infrastructures, the promotion of sustainable mobility, but also the training of personnel and the positive impacts that we can indirectly generate on the social and environmental performance of our supply chain. Community engagement activities, the professional growth of the local workforce and the technology transfer between the different countries where we operate, help to leave a lasting mark that outlives the construction phase of the work.

### WHAT WE DEPEND ON

- Motivated personnel
- Raw Materials & Energy
- Lenders
- Suppliers and Sub-contractors
- Clients
- Partners

### OUR 'VALUE CHAIN'



### THE VALUE WE CREATE

- Sustainable & lasting assets
- Sustainable mobility
- Renewable energies
- Reduced environmental impact
- Benefits for Local communities
- Creating added economic value

Creating shared value





Our objectives

With a view to stimulate continuous improvement of sustainability performance, in 2019 we defined a Sustainability strategy with related multi-year Plan, aimed at structuring and harmonising existing initiatives and best practices and planning

future initiatives within a framework of measurable and monitored objectives.

We intend to contribute to the achievement of the goals set by the United Nations 2030 Agenda for Sustainable Development (SDGs), embraced by governments, organisations and companies at a global scale, with specific actions aligned with such goals.



SUSTAINABILITY PLAN

Our 'Building a better World' corporate Sustainability Plan, relating to the three-year period 2019-2022, provides a framework for the definition of our Sustainability objectives and represents a tool to facilitate continuous improvement through the analysis and monitoring of our performance. The Plan provides a systematic approach to the integration of Sustainability objectives into business processes by increasing the sense of shared responsibility and motivation of the functions involved. Since it is shared externally, it allows communication to our stakeholders of the strategic direction of the company, strengthening competitiveness in national and international tenders.

The Sustainability Plan translates our corporate Vision into specific social, economic and environmental commitments that look at both internal topics, e.g. the safety and well-being of our people, and externally

through the attention to local communities. Our focus on value creation considers elements such as quality, innovation and local economic growth, while our attention to the environment looks at the impacts of our works, generated both locally and at the global scale, such as direct and indirect greenhouse gas emissions.

The commitments in the 3 spheres - social, economic and environmental - were in turn translated into actions aimed at achieving 8 macro-objectives. The themes embraced in the objectives were defined through the analysis and integration of internationally recognised standards, such as the ISO 26000 "Guide to social responsibility" and the SDGs, and reflect the values and guidelines expressed in company policies. The implementation of the Plan involves multiple functions, both at the corporate and site level.



PEOPLE

«Contribute to a fair and inclusive society by operating at the highest standards of Integrity and guaranteeing the Safety and Wellbeing of all our stakeholders, including the communities who benefit from the infrastructure we help to create.»



VALUE

«Contribute to the economic growth of the areas where we operate by generating Value and creating opportunities, thanks to the high levels of Quality and Innovation that we bring into our projects.»



ENVIRONMENT

«Strive to integrate our built projects in the existing Local Ecosystems and to be active participants in the global efforts to mitigate Climate Change.»

RELATED LINKS



Corporate Sustainability Plan



TARGETS

- 1. Consolidate a compliance and sustainability Governance at the corporate level
- 2. Promote the development of Human Capital and people Well-being
- 3. Ensure continuous improvement of occupational Health and Safety performance
- 4. Reduce local Environmental Impacts
- 5. Increase Energy Efficiency and reduce Greenhouse Gas emissions
- 6. Promote a Sustainable Supply Chain and the efficient use of resources
- 7. Encourage Local Development and dialogue with Communities
- 8. Promote Excellence and Innovation in our reference market

SDGS



Objectives and Sustainable Development Goals

Sustainability ratings

We are responding to the challenge of making Sustainability increasingly integrated into business processes and our commitment was recognised in 2019 by international rating systems applied at the corporate level.

We reached the Gold rating level of the EcoVadis platform, an independent global rating provider on corporate sustainability (CSR), which places the company at the top of the industry average. This recognition represents an important advance compared to the Bronze rating obtained in 2018 and places Ghella SpA in the top 5% of all the companies evaluated in terms of social responsibility. EcoVadis evaluates suppliers operating in 155 countries and 198 purchasing

categories based on 21 CSR indicators, using a methodology that incorporates various international CSR standards, including the United Nations Global Compact, the Global Reporting Initiative (GRI) and ISO 26000. The results of the EcoVadis evaluation are used by over 55,000 companies.



We obtained the maximum score (100/100) in the external audit carried out by Achilles, a global platform that certifies the performance and risk level of suppliers, with particular reference to 18 sustainability issues relating to the following 4 areas:

- Health and Safety at Work
- Environment
- Quality
- Corporate Social Responsibility (CSR)





### Ghella's headquarters

Our Rome headquarters is a constantly improving Eco Office: it generates 25% of its energy needs thanks to renewable sources such as solar and photovoltaic panels. Seasonal plantings and a green roof which thermally insulates the conference room are an integral part of this project.

The building has undergone redevelopment works, including the addition of the new conference room. The new volume, built mainly using local materials sourced within 125 km from the construction site, was the **first building in Italy to have obtained the LEED (Leadership in Energy and Environmental Design) Platinum v4 certification**: the highest level in the certification system for environmental sustainability of the **Green Building Council**.

The new architecture makes use of advanced radiation and ventilation control systems to ensure internal comfort. The glass facade integrates a system of mobile curtains to regulate the level of lighting and air circulation, while the collection and reuse of rainwater optimises the use of natural resources. The lighting system uses LED lights with motion detectors.


Since 2017, our **car fleet** has been **converted** into hybrid cars and electric vehicles. Thanks to this choice, we have so far saved around 119 tons of CO<sub>2eq</sub>. We **encourage soft mobility** when commuting to work: the garage is equipped with bicycles racks and charging stations for cars and electric bicycles.

In 2019, we **eliminated all plastic bottles** by installing taps for water microfiltration. An annual saving of about 14,400 bottles is estimated. The dishes in the canteen area are compostable, reducing the use of disposable plastic.

The office is equipped with a semi-automatic defibrillator: the device is registered on the website and on the app "TRENTA ORE PER LA VITA" (thirty hours for life), so that anyone in the proximity of the building who may need it can access it with the support of our trained staff.


### Rome office in 2019


 885,117 kWh of electricity consumed

 33,750 kWh of renewable energy produced using a 25.8 kWp photovoltaic system

 2,637 m<sup>3</sup> of water consumed

 4,496 kg of methane gas consumed

 8 filtered water dispensers installed generating a reduction of 14,400 plastic bottles used per year

 -79% in general waste following awareness campaigns

Italy, Rome,  
Ghella's headquarters





*“Sustainability and Social Responsibility are at the heart of our business strategy. Our commitment creates a positive and measurable impulse towards all stakeholders”.*

**Federico Ghella**  
Deputy Chairman, Ghella SpA

# Stakeholder Engagement

Over the past 20 years the role of companies in society has changed: from an initial focus on short-term financial performance and profit for shareholders, companies have shifted the attention towards aspects that can affect their solidity in the long term, such as the creation of social, environmental and economic value for their stakeholders<sup>3</sup>.

Creating shared value implies not only sharing with stakeholders the positive effects of operating sustainably, but also **listening** to different perspectives, opinions and experiences before making important decisions.

The challenge that companies face is to create synergies in the way the term sustainability is interpreted within their sector, i.e. to verify that the principles on which the company bases its way of doing sustainability, and sets its strategic choices, reflect the **needs, expectations and concerns of the stakeholders** with whom it shares the journey.

In Ghella, we are aware that the Vision "Leaving a better world for future generations" is achievable only through a joint effort, in which our stakeholders are made part of our sustainability path and are involved in setting its direction.

To this end, starting from 2019, we have embarked on a progressive **consultation process** aimed at

understanding how our corporate sustainability strategy responds to the priorities of key stakeholders and taking any potential corrective actions.

In line with the AA1000 Stakeholder Engagement Standard, the first

step was to map the key players who sit at the interface with our activities. The selection was made on the basis of their ability to affect Ghella's objectives, impacts and performance, or be affected by it. The image below shows the categories of Ghella's **main stakeholders**.

The second step was to identify a set of environmental, economic and social topics in line with the objectives of our Sustainability Plan, the SDGs and the GRI Standards. The study was also enriched by the analysis of other documents specific to the construction sector<sup>4</sup>, leading to the definition of a set of **29 relevant sustainability topics** on which to focus the analysis.



Ghella's main stakeholders

## 1 Mapping key actors (stakeholders):

They affect Ghella's performance or are influenced by it

## 2 Identification of environmental, economic and social topics:

In line with our objectives, the SDGs and the GRI Standards

## 3 Materiality analysis:

Survey on a representative sample of stakeholders

### Materiality matrix:

Identification of material issues







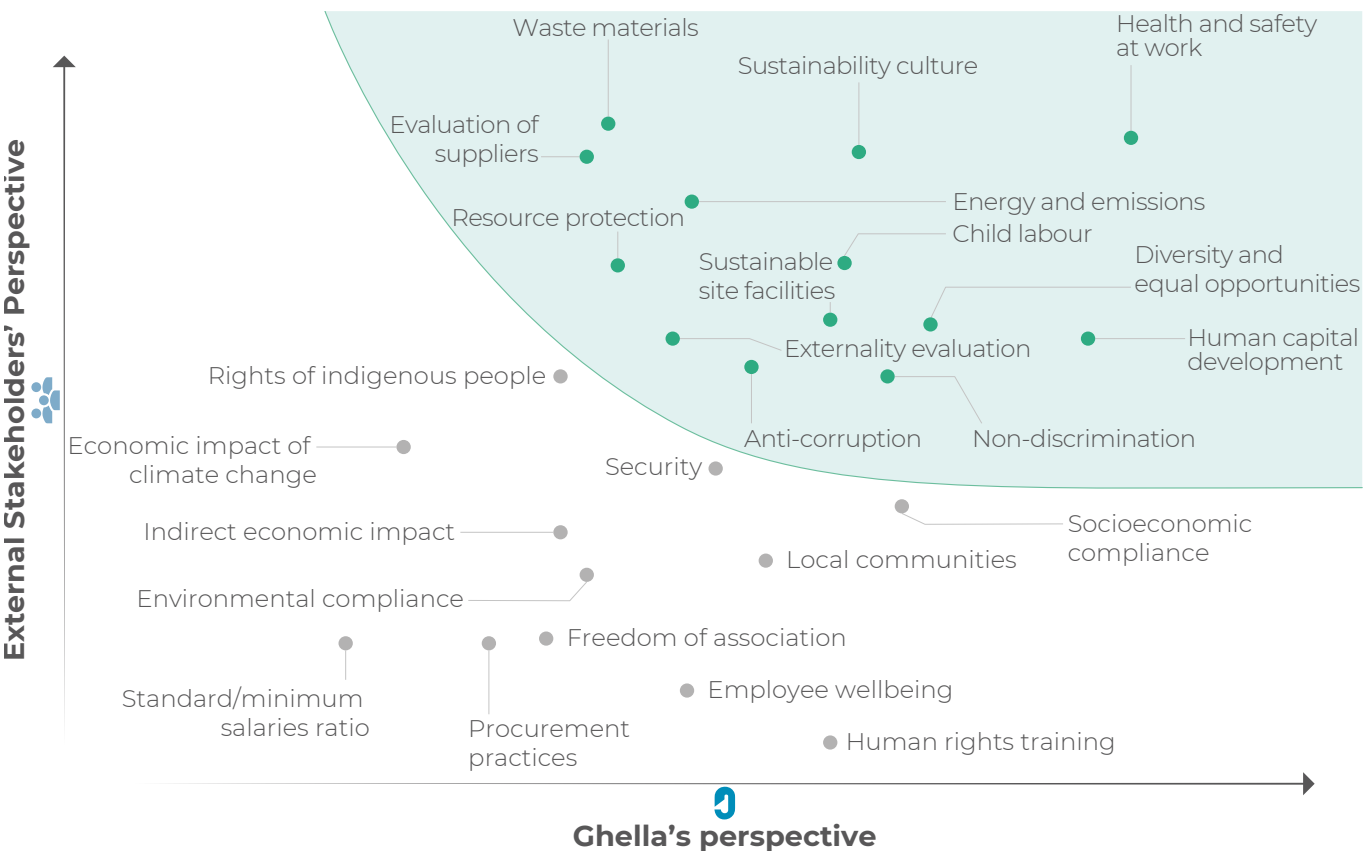
Italy, Brenner,  
Photo by Andrea Botto from the photographic project "Di roccia, fuochi e avventure sotterranee"

# Materiality analysis

The third step of the engagement process represents the core of our **materiality analysis**: we conducted a survey that involved a representative sample of the different types of stakeholders, internal and external, identified in the mapping phase, where we asked the respondents to express their opinion on the importance

that Ghella should assign to each topic, over a three-year time time-span.

By cross-referencing the results of the consultation, we obtained our first **materiality matrix**. The material topics so identified, i.e. those that were found to be most significant according to both perspectives, represent the economic, environmental and social impacts significant for Ghella and which substantially influence the assessments and decisions of stakeholders.



Ghella's Materiality Matrix



The resulting **13 material topics** include

- **Health and safety** at work, which is an absolute priority for all stakeholders involved;
- the social topics **Child labour, Diversity and equal opportunities, Non-discrimination** and **Human capital development**, relevant for both perspectives but particularly important to internal stakeholders;
- the environmental topics **Energy and emissions, Waste and Resource protection** - which includes Materials, Water and Biodiversity - relevant for both perspectives but particularly important to external stakeholders;

- the economic topic **Anti-corruption**;
- the transversal topics **Sustainability culture, Evaluation of suppliers, Sustainable site facilities** and **Externality evaluation**.

Our Materiality Matrix, which will be updated periodically, represents a mission statement for us.

To date, the material topics identified represent the aspects on which we have focused the reporting within this 2019 Sustainability Report, in line with the reporting principles of the GRI Standards and of **transparency**. We have chosen to give space within this Report also to those topics falling outside the material scope, where these were considered particularly relevant to our sector. These are Local

communities, Rights of indigenous peoples, Employee wellbeing and Human rights training.

The material topics will be the main aspects on which we will focus our energies in the coming years, by giving them emphasis within the Sustainability Plan, in order to meet the expectations and interests expressed by our stakeholders. The engagement process is only at the beginning; we intend to maintain a constant dialogue over time by implementing increasingly refined consultation methods, with a view to focus on **inclusiveness** and **mutual listening**.

The table "*Link between material topics and SDGs*" highlights the sustainable development goals to which we contribute by acting on the material topics identified.

MATERIAL TOPICS	SDGS	
Health and safety at work	Ensure health and well-being for all and for all ages.	
Sustainability culture	Ensure access to affordable, reliable, sustainable and modern energy systems for all.	
Child labour	Ensure health and well-being for all and for all ages.	
Diversity and equal opportunities	Achieve gender equality and empower all women.	
Non discrimination	Reduce inequalities.	
Human capital development	Provide quality, equitable and inclusive education, and learning opportunities for all.	
Energy and emissions	Ensure access to affordable, reliable, sustainable and modern energy systems for all. Promote action at all levels to combat climate change.	
Waste	Protect, restore and promote sustainable use of the terrestrial ecosystem.	
Resource protection	Guarantee sustainable models of production and consumption. Ensure the availability and sustainable management of water and sanitation facilities for all. Protect, restore and promote sustainable use of the terrestrial ecosystem.	
Anti-corruption	Peace, justice and strong institutions.	
Evaluation of suppliers	Guarantee sustainable models of production and consumption.	
Sustainable site facilities	Ensure health and well-being for all and for all ages.	
Externality evaluation	Make cities and human settlements inclusive, safe, long-lasting and sustainable.	

Link between material topics and SDGs



Our TBMs



Profile



Giovanni Giacomini

Director of the Tunnels & Mechanised Excavation Dept.

Can you briefly describe your role?

I am the Director of the Department of Tunnels and Mechanised Excavation: I deal with the operational management of mechanised excavation sites all over the world. Excavations are the core business of the company: we stand out in a highly competitive market thanks to our professionalism and experience, as well as the ability to adapt effectively to the most complex situations.

What is the most stimulating aspect of your job?

No two tunnels are alike. The variables in tunnelling are infinite: the type of infrastructure, the geological features, the environmental conditions change. In our sector, technologies are constantly evolving, and this dynamism is a stimulus to take nothing for granted, to improve ourselves and never stop learning. Human relationships are fundamental: the heart of our activities is the construction site, where we not only work together but practically live together, and this leads to the development of a network of relationships that often continue through life.

What are the advantages of mechanised excavation and what effects did the introduction of this tunnelling innovation have on safety and environmental performance?

Underground work has always been characterised by a certain degree of danger. For this reason, we have always strived to find solutions to minimise risks and create a healthier and more sustainable work environment.

The shift to TBMs (Tunnel Boring Machines), commonly called moles,

for the excavation of tunnels, was crucial. These allow to operate in a protected space, and therefore improve safety and working conditions, at the same time increasing productivity.

Can you describe the 'journey' of a TBM from the design to the disposal phase?

Each TBM is created for a specific project and is "baptised" with a different name, with the aim to emphasise its uniqueness. Traditionally it is a feminine name. A complete TBM can weigh hundreds of tons and be up to 200 meters long.

It is assembled at the destination site by specialised personnel; then its journey begins, digging day and night in the tunnel, for months or even years, until the end of the tunnel where it is dismantled and removed.

Very often the life of the TBM does not end with the excavation of the tunnel: the machine can be overhauled and modified, even substantially, to be adapted to other projects and continue to be productive for many more years. Naturally with a new name, preferably female.

TBM names

Tunnel Boring Machines traditionally have **female names**. A practice that comes from afar and that over the years has taken on new connotations of **great social significance**.

In Australia, at the Sydney Metro City & Southwest worksite, it was decided to dedicate the five TBMs to women who are important to the Australian community:

**Nancy**, in honour of **Nancy Bird-Walton OBE**, the youngest aviator to be licensed for commercial flights in the Commonwealth and founder of the Australian Women Pilots' Association;

**Mum Shirl**, Aboriginal activist, who devoted her entire life to defending the rights of Aboriginal Australians;

**Wendy**, in honour of **Wendy Schreiber**, a volunteer at the one and only home for children with disabilities in New South Wales;

**Mabel**, in honour of **Mabel Newill**, head nurse at the Royal Prince Alfred Hospital in Sydney;

**Kathleen**, as **Kathleen Butler**, the sole technical consultant to John Bradfield, the engineer who designed the bridge crossing Sydney Harbour.



Australia, Sydney, Wendy Schreiber at Chastwood next to TBM Wendy







# Ethics and Integrity

## Code of ethics

Our **Code of Ethics** aims to define the values, commitments and ethical - social responsibilities that all those who work in the name and on behalf of Ghella are required to assume when carrying out business activities. It expresses the ethical and conduct principles that represent us and that all those who work to achieve the Company objectives are

required to comply with.

The Code of Ethics, which can be consulted on our website Ghella.com, is adopted by all Group companies and all employees are periodically **trained** on its contents.

## Organisation and management model

**PURSUANT TO ITALIAN LEGISLATIVE DECREE 231/01**

Ghella SpA has adopted an **Organisation, Management and Control Model** aimed at preventing risks associated with crimes pursuant to the Italian Legislative Decree 231/2001. The latter provides for administrative responsibility of companies for criminal offences committed in pursuing their interest, using financial penalties and disqualifications; among these we highlight the crimes of corruption, environmental and workplace safety crimes, crimes against industry

and trade and anti-competitive practices, crimes against the individual (human rights and work practices), crimes of financing of terrorism and transnational crimes.

The Supervisory Body, equipped with autonomous powers of initiative and control, is entrusted with the task of supervising the functioning and observance of the Model and proposing its updating, as well as promoting suitable communication and training initiatives aimed at spreading its knowledge and understanding within the company.

### RELATED LINKS



Ghella site,  
Ethics & Compliance



Ghella site,  
Our way

## Anti-corruption



To cope with the potential risks that corruption implications may have on the performance of business activities, in March 2019 we adopted a system of rules and controls through the introduction of new **Anti-Corruption** guidelines, that apply to Ghella SpA and all its subsidiaries, in their relations with stakeholders. These provide for the measures to be taken, in compliance

with the principles expressed by Transparency International and with the main international standards and best practices, and for the controls to be carried out including the performance of due diligence on third parties aimed at assessing their integrity and reputation.

The Compliance and Sustainability function provides specialist support

to ensure the implementation of the Anti-Corruption guidelines.

To disseminate the Anti-Corruption guidelines within the company, a multilingual e-training program was launched, aimed at all the staff of Ghella and its subsidiaries.

## Whistleblowing

We have implemented a **whistleblowing** policy, adopted by all Group companies, which regulates the methods for making reports confidentially on any violations or suspected violations of the Code of Ethics, Policies, Company guidelines,

crimes envisaged by the Italian Model 231 or other irregularities in the application of internal procedures. The policy defines the communication channels made available to employees and external stakeholders to file reports. During 2019, no reports were received.

## Human rights



**Dignity and respect** for people are pillars of our corporate culture: we are committed to operating according to international best practices<sup>5</sup> in all activities globally, in order to prevent any **human rights violations**. This requires not only an ethics shared by all employees and collaborators, but also a set of rules, principles and controls aimed at ensuring integrity, transparency and strict adherence to the laws.

In March 2019, we updated and expanded the set of **Corporate Policies** that include principles relating to the protection of human rights. These are applied to both internal stakeholders and the supply

chain, through the qualification of suppliers and the transmission of company policies and contractual clauses, and are available on our website Ghella.com.

In particular, the **Human Rights Guidelines** provide our employees, suppliers and partners with a tool to identify and prevent potential Human Rights violations.





# People



Enrique

Pablo

Alejandro

Jesus

Massimo

José Raul

Bengt

Jesus

Alvaro

Juan

Andrea

Alberto

Paolo

Pedro

Jacobo

Emiliano





# People

We believe in our **people** and we value them. We are committed to providing the best opportunities for individual **development** and to protecting the rights and needs of our employees. We are constantly working to ensure the best occupational **health and safety** standards for our employees and for subcontractors working on our construction sites. We monitor our **supply chain** to ensure that **Human Rights** principles are respected, and suitable **working conditions** are guaranteed.

We follow the highest ethical and behavioural standards in our work. We offer active **leadership** and promote trust, transparency and collaboration to develop **teamwork**. We favour the creation of an optimal work environment for achieving excellent results.

Our attention to social inclusiveness is not limited to the company perimeter: we listen to the expectations of the **Local Communities** who will benefit from the public works we help to create. We are committed to leaving a positive legacy with our projects

and to protecting and promoting the well-being, human capital and environmental, historical and cultural heritage of the territories where we work.

## Health and safety



The health and safety of our staff, whether direct or contract employees, is a top priority: no deadline is more important than ensuring that our people work in a safe manner and that their health in the workplace is guaranteed.

The correct management of these issues has always been at the centre of our *modus operandi* and since 2010 it has been formalised through the adoption of an **Integrated Management System** whose component relating to **Occupational Health and Safety** is certified in accordance with the international standard **ISO 45001: 2018**. We apply the **risk-based thinking** to identify and assess all risks present in the workplace and that could impact our stakeholders. This approach allows us to **continuously improve** our performance, by taking into account the context and the requirements of our stakeholders, including partners, and determining the **risks and opportunities** that need to be managed to ensure the highest standards in Health and Safety at work.

When realising our projects we manage potential risks on Health and Safety with competence and experience, mitigating them through a profitable collaboration with specialised partners.



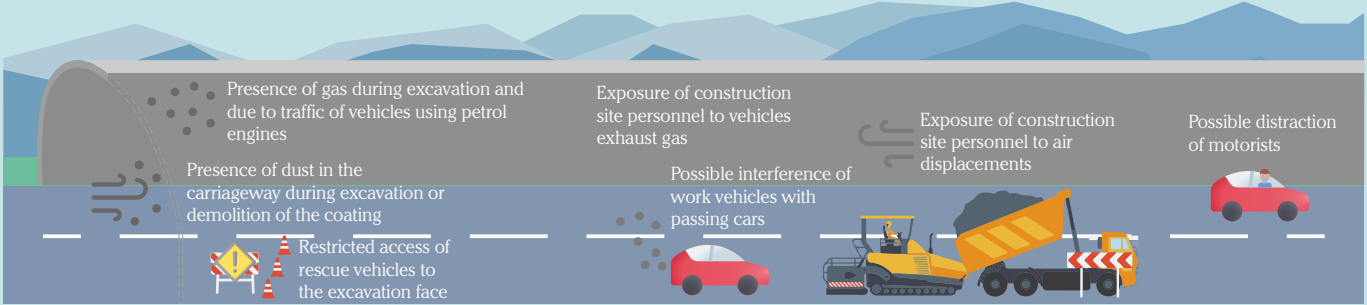


The activities we carry out expose workers to risks that could have serious impacts on their health and safety, in terms of injuries and occupational diseases. We have defined the tools necessary to identify all the dangers present in the workplace and assess the risks associated with them and have defined the prevention and protection measures necessary to cancel or reduce them to a minimum. To this end, we use the **know-how** developed in our many years of practice, taking into account the **lessons learned. Knowledge-sharing** is pursued within the company: in this way we analyse incidents, by researching their root causes and defining corrective and improvement actions. Through risk assessment activities, we identify **education** and training requirements and **health surveillance** measures applied to all workers exposed to health risks.

The **engagement** of our stakeholders, such as subcontractors, clients or third parties, in the risk assessment process that we conduct in our worksites is of utmost importance: everyone has the possibility and responsibility to report inappropriate / illegal behaviours, dangerous situations or violations of the principles of Health and Safety, or to suggest improvement actions. For this reason, we have activated dedicated **communication** channels, including through employee representatives and observation cards, hence guaranteeing the ability to report with no risk of repercussions, as required by our Whistleblowing Policy. Worker representatives are also involved in the analysis of incidents and are informed on the progress of injuries and health surveillance, as well as on health and safety information and training programs

Innovation for safety: concrete traffic shield

The **in-situ enlargement** of existing tunnels is a practice that allows to avoid deviations or interruptions of traffic by using a specific excavation method. This significantly reduces the inconvenience for users and the costs and time for carrying out the works, however at the same time it presents the need to **manage a series of risks**, both for **workers** and **motorists**.



In 2014, during the upgrading works on the A14 motorway between Ancona North and Ancona South, in Italy, Ghella modified and redesigned the **protection system** for in-situ enlargement designed by the client. This involved the construction of a steel shield about 20 m long, suitable for segregating just the work area near the excavation face from car traffic. The rest of the tunnel was separated using new jersey barriers with a net fitted above: a system not suitable to reduce the risks involved. For this reason, a **concrete lining shield** was designed, running for the entire length of the tunnel, having a box-like shape. This substantial **innovation in geometric shape, length and material** made it possible to completely segregate the work areas from car traffic, hence eliminating or minimising the risks associated with the original system, especially in terms of **safety** management, and creating at the same time a third work front in the upper part of the shield.

The **benefits** of this innovation extend beyond our construction sites, where the idea was developed and implemented. To date, the concrete shield finds **application in other projects** where it is necessary to keep the motorway in operation with minimum disruption, such as the restoration of deteriorated tunnels. The system guarantees high levels of safety to workers and users during the entire duration of the works.



Our **organisational structure** is composed of specialised and trained people who work to guarantee the best health and safety conditions for all workers involved in our activities, both internal and external. In particular, our technical staff have the skills to design the safety features of our construction sites in accordance with the provisions of relevant regulations, at European and international level, and so ensure the most suitable and innovative safety measures are implemented. Our system allows for a constant control of the activities, thanks to a **hierarchy of controls** defined and implemented through a waterfall mechanism by all the subjects involved in the activities, starting from the top Management down to the operational personnel.

**Training** is a fundamental tool for us to engage our workers and create a safe workplace. It promotes

the development of skills and increases awareness of individual responsibilities in relation to health and safety. Training is carried out in different forms (such as induction, on-the-job training, internships, e-learning, daily or weekly tool-box talks, Safety Job Analysis, etc.) depending on the needs and objectives set and taking into account the context and local legislation. Individual training requirements are defined for each resource through a risk assessment process and by analysing the needs of each worker.

The training provided in 2019 mainly concerned the following topics:

-  **Mandatory training** required by laws in force in each location;
-  Description of the **Health and Safety** and **Emergency Organisational Structure**;
-  Description of the **Company Management System**;
-  **Reference** legislation;
-  Assessment of **health and safety risks** associated with company activities and in particular those connected with individual worker tasks;
-  Procedures relating to **emergency management**;
-  **First Aid** and **Fire Fighting**;
-  **Other training** required by current legislation in the specific workplace.

In addition to defining and implementing a health protocol, in order to promote the health of our workers we have activated awareness campaigns on the importance of prevention through the adoption of correct lifestyles.

Specific training sessions were organised in 2019, addressing issues such as Workplace Health Promotion, the concept of health, posture and physical fatigue, visual fatigue, work-related stress, technostress, healthy eating, sedentary lifestyle, etc.

We monitor injuries by analysing them, in order to identify improvement actions aimed at preventing future occurrences and to spread a **Health and Safety**

**culture** among our people and all the stakeholders involved in our activities.

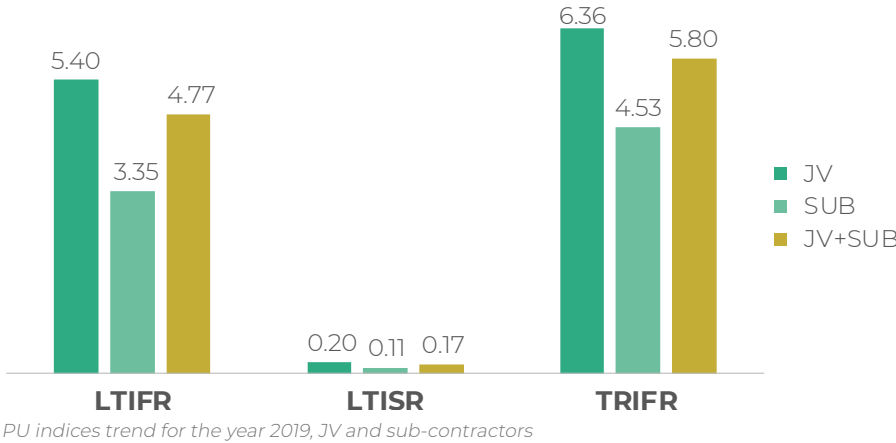
By training and promoting engagement initiatives, aimed at encouraging the active participation of all, we are committed to achieving our primary objective in terms of Health and Safety: **“zero harm”**.

With reference to the production units included in the scope of this report, we report the values of the injury indices (frequency index -LTIFR<sup>6</sup>, severity index - LTISR<sup>7</sup> and total frequency index - TRIFR<sup>8</sup>) recorded in the year 2019.

RELATED LINKS

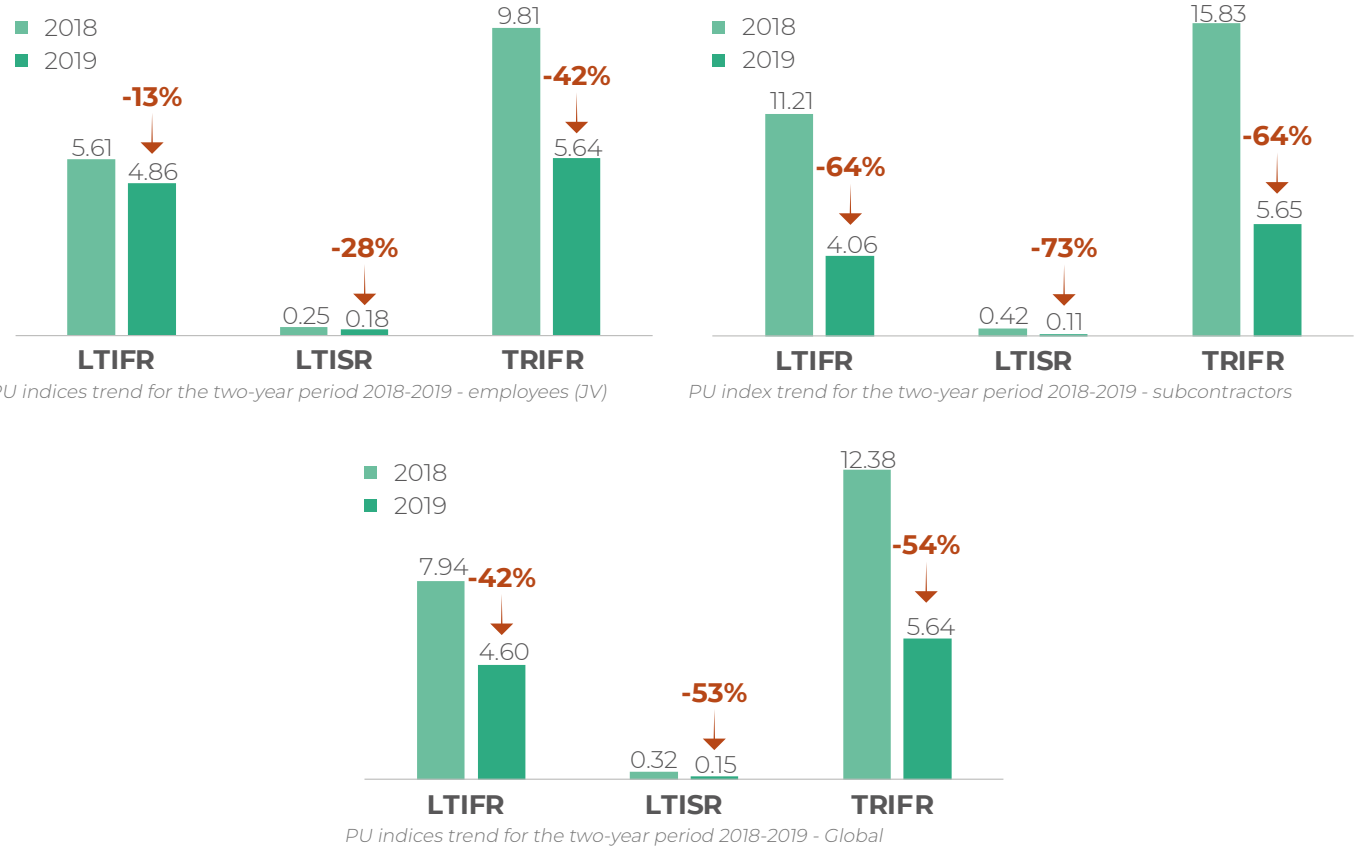


Whistleblowing Policy





To better understand our performance, the values of the indices recorded in the two-year period 2018/2019 are shown below, calculated considering all the sites active in the reference period<sup>9</sup>.



Although our "Zero harm" goal was not fully achieved in 2019, our performance can be considered positive since - as shown in the graphs - there was a decrease in the values of all the indices compared to the previous year.

	Worked hours	LTIR <sup>11</sup>	MTC <sup>12</sup> + RWC <sup>13</sup>	Recordable work-related injuries	High-consequence Injuries	High-consequence injury rate
Employees (JV)	11,478,268	62	11	73	2	0.17
Subcontractors	5,071,940	17	6	23	0	0

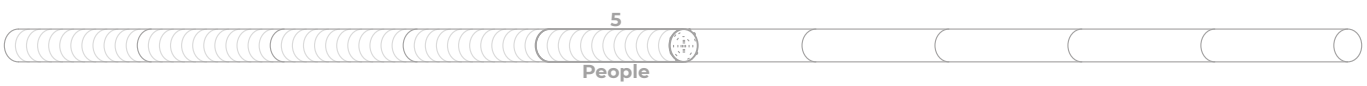
Data relating to injuries for the year under review

During this reporting year, no fatal injuries occurred. We had 2 high-consequence injuries, which led to an injury rate of 0.17<sup>10</sup>. The injury rate for subcontractor is zero.

The investigation of these events revealed that the cause was accidental and not strictly related to the work environment. Following the injuries, all the necessary measures to prevent future occurrences were identified and undertaken, including a new training cycle on the importance of maintaining high levels of attention in the workplace, within the specific and complex context in which we operate.

Given the type of activities carried out by the company and based on the risk assessments carried out in the various Production Units, we can say that the work hazards that constitute a risk of high-consequence injury are mainly physical and related to the organisation of the work. The most frequent causes of injuries can be traced back to tripping or slipping, collisions and crushing, which have mainly caused blunt trauma and sprains.

We recorded a low number of high-consequence injuries



# Profile



**Juan Castro**  
H&S and Social Manager  
Riachuelo, Argentina

**What is your career path and what led you to Ghella?**  
For more than ten years I have had the opportunity to join high profile projects in Argentina, Brazil and Peru. The level of complexity, the scale and scope of these works have marked my career. The versatility that I developed thanks to these experiences was the key

element that pushed me towards the world of the mechanised excavation in Ghella. I was thrilled to take part in this great new challenge.

**Can you briefly describe your role?**  
In every project it is essential to rely on a solid H&S department operating with the aim to spread a safety culture, based on prevention. My role as Safety Manager includes training for continuous improvement, which disseminates a clear message to everyone, so that each person can work in conditions of maximum safety. To operate successfully, the support of the site Management is essential.

**What is the most stimulating aspect of your job?**  
I think the biggest challenge is managing the potential risks and any impacts that may arise. The main responsibilities and challenges of my role are the need to be constantly on the ground, developing new strategies and tools to ensure the well-being of people in all construction activities.

**Describe in 5 keywords a responsible attitude with respect to safety for a worker on site**  
*Training, Awareness, Planning, Respect, Responsibility*

**Describe your typical day**  
On Monday at 7:00 in the morning, I send a message to the construction site staff where the first words are "good morning, have a good day and good week everyone". Afterwards, I receive updates from all site departments, check e-mails, plan the week and the various site meetings and inspections. I usually visit the construction site after lunch, trying to check one area a week. At the end of the day I am satisfied because I am aware that everything possible has been done to protect our personnel.



Argentina, Buenos Aires,  
Dock Sud Tunnel, Riachuelo Project





Our people

For Ghella, people represent an essential element of competitiveness and growth. We believe in our resources and through careful and conscious management we promote trust, transparency and collaboration. We favour the creation of an optimal work environment for achieving excellent results.



Employees by type of contract and gender  
P= Permanent; T = Temporary/Fixed term; OCT= Other contractual types

The workforce within the scope of this report includes a total of 2,191 employees<sup>14</sup>, the majority of which is hired with a permanent contract, both in the case of women and men. The nature of our production activity, taking place in construction

sites with a predetermined life cycle and dislocated in places that may change each time both nationally and internationally, entails a physiological interruption of the employment relationship at the end of the project. For this

reason, the re-employment of the same personnel in new contracts is encouraged, when possible, in order to guarantee career continuity and retain company know-how.

RELATED LINKS



HR Management Policy



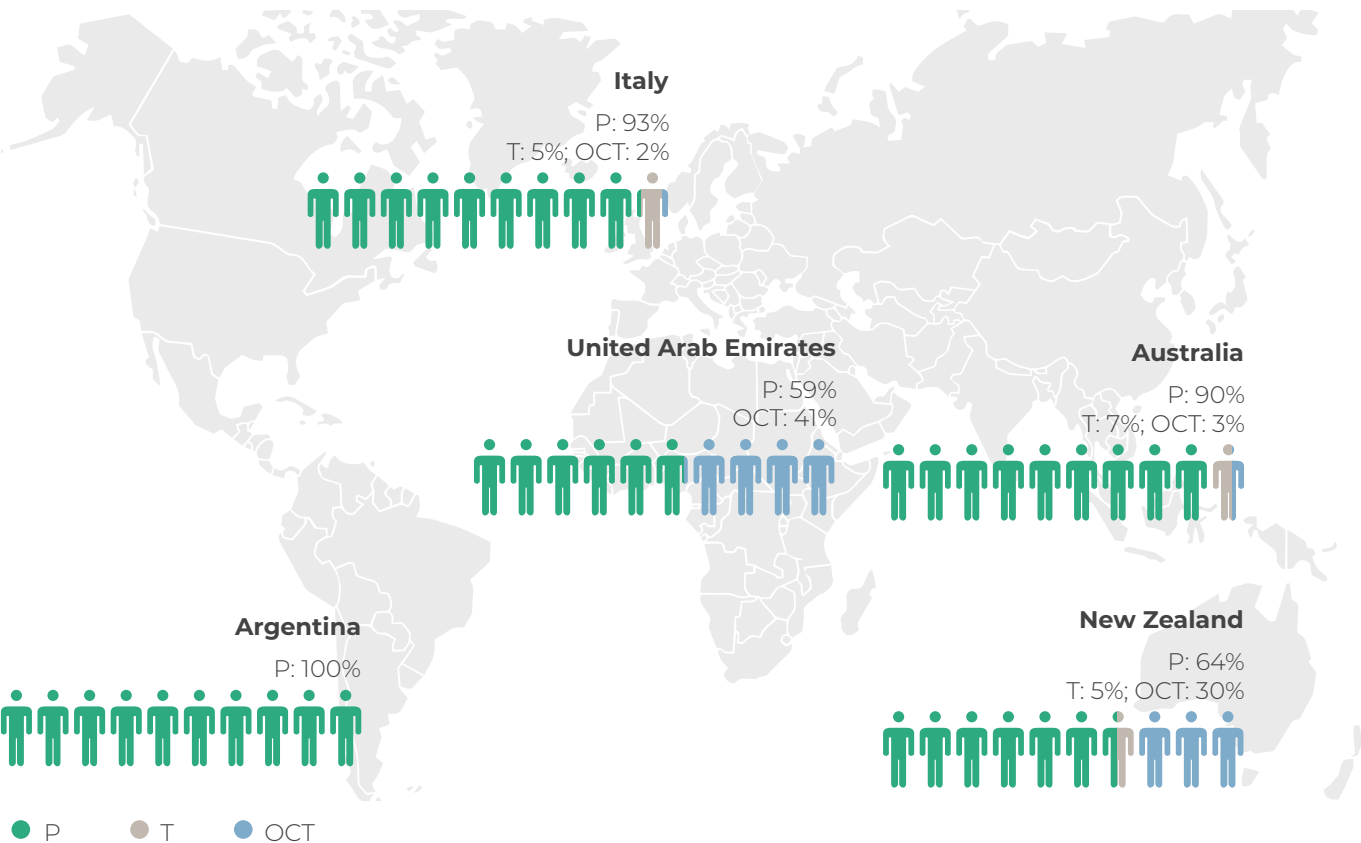
Corporate Sustainability Plan



Psychological wellbeing in New Zealand

A study carried out in 2018 by BRANZ, an independent research institute, found that the construction sector is by far the one with the highest suicide rate in New Zealand.

To fully protect the workers of the Central Interceptor site, our Joint Venture Ghella Abergeldie contributed to the foundation of “**MATES in Construction NZ**”, a suicide-prevention organisation specifically aimed at construction workers. The organisation, already present in other countries, has developed specific support programs: at the Central Interceptor construction site, it provides all workers with a **period of training** and on the job support to help anyone who may need it.







New Zealand, Auckland,  
Haka Maori dance during the Santa Barbara celebration at the Central Interceptor construction site

## DIVERSITY AND INCLUSION



We are aware of the importance of **gender equality** in our sector, where the presence of women has been limited in the past. We work to ensure a work environment that removes all obstacles to the natural evolution of the sector towards an equitable distribution of gender among employees. For this reason, we have integrated principles relating to the protection of diversity and equal opportunities in our **Integrated Management System**, which includes the definition of specific policies and procedures, such as the "Policy for human resources management", the "Policy for equality, diversity and inclusion (EDI)" and the "Human Resources and Organisation Procedure".

Our procedures ensure that employees are **hired** exclusively based on matching skills and on the applications received by the company, keeping track of the curriculum vitae analysed during the selection phase and excluding any sensitive information that could lead to discrimination from an evaluation perspective. To date, the company has workers of different nationalities,

genders and ages, in a multicultural and stimulating working environment.

**We condemn any kind of discrimination** against our workers, guaranteeing equal opportunities to all employees, regardless of sexual, religious, cultural, political or any other characteristic. Our "Appropriate workplace behaviour" Policy clearly defines the inappropriate attitudes condemned by the company and provides information on the reporting channels available to employees through the "Whistleblowing Policy".

Particular attention is given to parents of school age children, through measures aimed at facilitating work-family reconciliation. We operate, due to the peculiarity of our technical activities, in a context where the majority of the professionals are male. For this reason, to ensure fair treatment within the organisation, we constantly monitor data relating to **gender pay-gap**, preparing annual review plans aimed at "harmonising" this condition.

## RELATED LINKS



Ghella site,  
Ethics & Compliance



HR Management  
Policy



EDI Policy



Appropriate  
Workplace  
Behaviour Policy



Whistleblowing  
Policy

## Santa Barbara: the patron Saint of miners

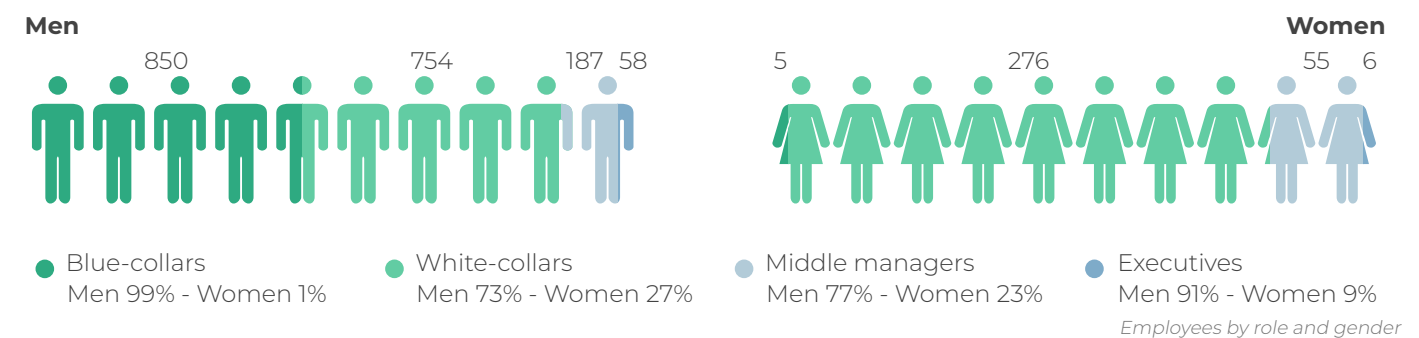
*Every 4th December, the date when the Saint is commemorated, we celebrate our Patroness with significant events on the construction sites. It is one of the most important and heartfelt moments for our entire community: it reveals the importance of tradition, intended as a value that is handed down from generation to generation. Memory plays a very strong ritual and symbolic role, enriched over time with contemporary and inclusive elements. It is a time of joy, of meditation, of meeting and sharing.*

*In Auckland, New Zealand, at the Central Interceptor worksite, the 2019 celebrations for Santa Barbara began with a Haka, the Maori propitiatory dance, followed by the blessing of a Catholic priest. A meeting between cultures that reflects our values: **respect for tradition and attention to local customs**.*

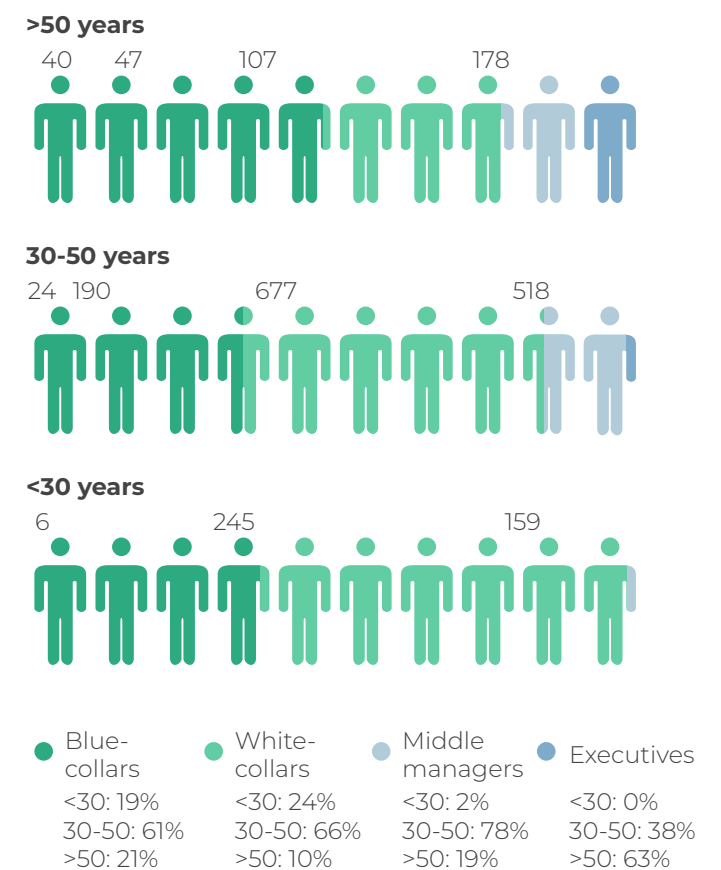
Our consolidated **HR data**<sup>15</sup> for the year **2019** show a similar distribution between men and women in the middle managers and administrative staff categories, while blue-collar workers are almost exclusively men. Women also appear slightly underrepresented in

executive roles.

For transversal roles (e.g. administration, finance and services in general), the percentage of female executives is adequately represented within the organisation and in line with what reported in other sectors.



The breakdown by age of employees shows a prevalence of the 30-50 age-group in the Blue-collars, White-collars and Middle managers categories, with a greater representation of the under 30 age group in the Blue-collars and White-collars categories. The over 50 age-group is prevailing in the Executives category.



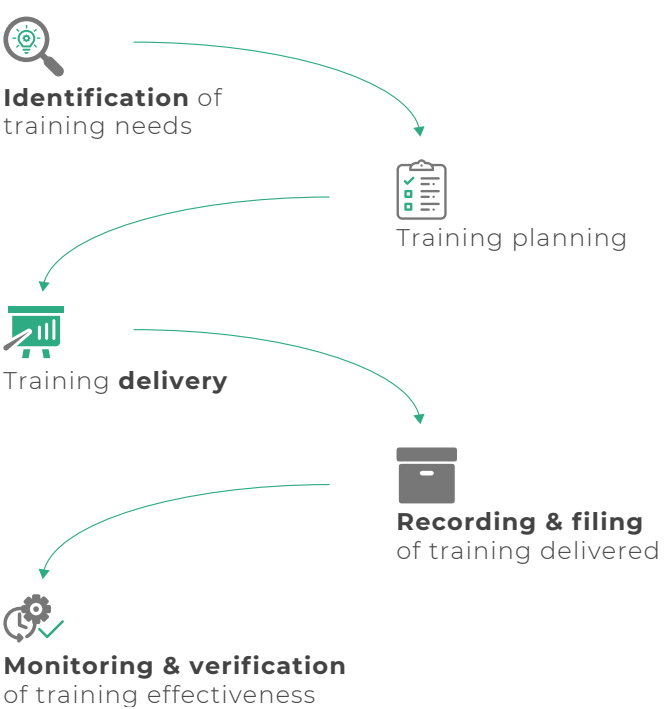


DEVELOPMENT OF HUMAN CAPITAL



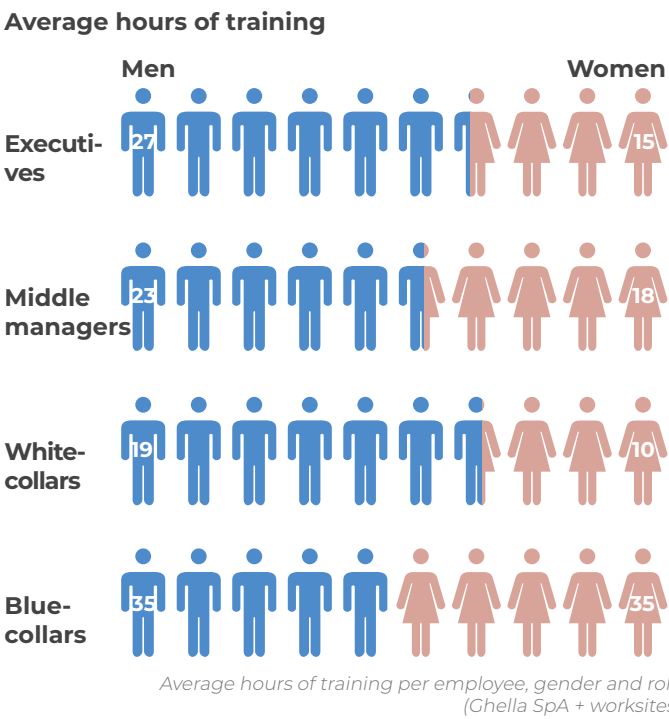
Developing skills, growing and valuing each employee, with no discrimination of any kind, is a key element for achieving our corporate objectives and for the creation and promotion of a culture aligned with our corporate values.

Our training process involves the identification of training needs for all Ghella SpA staff, considering each resource individually and connecting with the specific situation of each employee, in order to understand individual attitudes and provide the most appropriate tools for the development of people's potential. Training is carried-out in different forms such as training on the job, internships, e-learning, etc., chosen depending on the needs and objectives set, and generally divided into the following phases:



We take advantage of inter-professional funds to co-finance non-compulsory training activities, ensuring a continuous growth of skills. In 2019, our key personnel at the headquarters was involved in a Project Management course that provided everyone with the necessary training to take the exam for PMP (Project Management Professional), an international certification.

In 2019, overall 53,737 hours of training were provided to the personnel of Ghella SpA and of the worksites included in the reporting scope, distributed between men and women as illustrated in the graph. The average training hours per employee are calculated dividing the hours of training by the number of employees in each category and gender. This normalisation shows an equal distribution in terms of average hours of training between men and women for each category. Overall, an employee receives an average of approximately 25 hours of training.



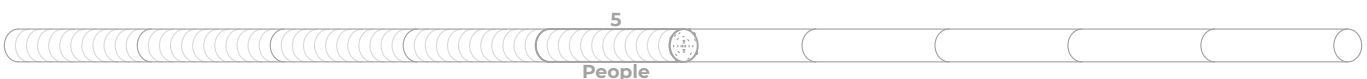
WAGES AND INDUSTRIAL RELATIONS

Remuneration levels are defined according to the principles of fairness and are commensurate with the experience and qualification of the resource and in no way can it be lower than the minimum figures required by law or collective agreements.

We value the dialogue with trade-union organisations as a moment of negotiation, consultation, exchange of useful information, and we encourage the application of collective agreements, wherever they are in place.

Each worker is free to join a trade-union of choice. The company undertakes to make special spaces available for this purpose on the company notice boards and provides places suitable for meetings between workers and their trade-union representatives.

In 2019, 73% of the total workforce was covered by collective agreements on working conditions.



CHILD LABOUR



We strongly believe that all forms of employment must be the result of free choice, therefore we **prohibit any type of forced-labour**, prison-labour, or any other modern form of slavery or human trafficking and extend these provisions to our business partners, in accordance with the ILO n. 29 - Convention on forced labour and the ILO n. 105 - Abolition of the Forced Labour Convention.

We **do not allow the use of child-labour** and we recognise **education as one of the most important factors** for the mental and physical development of minors. Our human resources procedures guarantee the sole employment of people aged 18 or above, hence guaranteeing the absence of child-labour accidents. The direct control we have over our resources reduces the risk of such accidents occurring. We extend our social

responsibility to suppliers through our qualification system and contractual clauses, which ensure alignment with company practices on child labour.

During the construction phase, the issue of child labour is managed by the human resources team at the site level. They directly apply corporate policies and procedures relating to Human Rights and child labour in cases where we operate in a JV setting where our Company Management System is adopted. In cases of JVs where our company management system is not applied directly, we make sure that procedures at site level comply with our principles and rules. We consider the risk of child labour accidents to be very low in all our sites.

SUSTAINABILITY CULTURE

We believe in the potential of every organisation to contribute to the achievement of collective objectives, such as the SDGs, through the creation of a corporate culture in which sustainability principles are integrated into the values and conduct of people and therefore multiply their positive effects also outside the work sphere.

We know that **at the base of all actions** aimed at improving sustainability performance, inside and outside the company, **there are the people** who perform them. Therefore, we consider activities of central importance raising awareness and providing sustainability related information to employees. We carry out awareness campaigns, both centrally and on site, on issues to which all individuals can relate within their work life, such as the correct segregation of waste or energy and water saving, or on social issues such as diversity and inclusion.

We are aware that our most significant environmental impacts are connected to the production activities, such as excavation sites, but we believe that the creation of a

solid corporate culture based on sustainability principles can be an important driver for change. This is the reason why we are committed to ensuring that our offices, branches and construction site offices are a model of responsible management of natural resources, where the work environment demonstrates its sustainability also through the daily actions of the people who work in it.

Among the various tools used to support the spreading of a corporate sustainability culture, we have recently redesigned our corporate **Intranet** page, where we share news on a variety of topics: information and updates from our construction sites, short pieces on the company history, humanitarian or social causes promoted by the company, sustainability initiatives implemented at the headquarters and on construction sites. Together with other tools, such as the **corporate photographic archive**, the intranet helps us keep the relationship between offices and construction sites alive by encouraging curiosity through images and sharing.



Italy, Rome  
Engagement initiative in the headquarters during a "Fridays for Future" event -  
Banner made on reused plotter paper, photo by Francesca Paracini





# Local communities



We work on the creation of infrastructure that generate **long-term local benefits** by enhancing services to citizens and increasing the **productivity** and **competitiveness** of the **areas where we operate**. At the same time, the creation of infrastructure can have positive effects on the **environment** at the local level, as in the case of railway projects that promote a transport modal shift from road to rail and so improve air quality, or water projects that reduce spills of wastewater into water courses or the sea.

Our activities generate a **local economic income** linked to the construction phase, through the creation of **jobs** at the construction site and indirectly in the supply chain. In addition, the international nature of our company involves the **transfer of know-how** between the various regions of the world where we operate and the subsequent **professional growth** of the local workforce, especially in technical areas such as the operation of TBMs and their maintenance.

These benefits go beyond the construction phase of the work, leaving a lasting **legacy** to the local population. However, we are aware that the construction phase can cause **inconveniences and disruptions** for the communities in the immediate proximity of the construction sites, such as noise, **vibrations** or the temporary closure of roads and public areas. In the case of sites in urban areas, such as projects for underground lines, there may be additional inconveniences associated to the movement of construction vehicles and supplies, and to the transport of excavated materials through city streets.

For this reason, in our construction sites **engagement of local stakeholders** is carried out from the earliest stages of construction with the aim of **informing and consulting**, of **mitigating** negative impacts as much as possible and, where possible, offering **compensatory measures**. Information-oriented initiatives include individual visits to residents (door knocking), “Meet the contractor” events or initiatives to involve schools adjacent to our construction sites. Mitigation measures include the installation of noise barriers. For example, in some construction sites conveyor belts carrying excavated materials have been equipped with an external casing in order to minimise the noise generated by the continuous movement of the belt. Compensatory measures may include direct contributions to local residents, with a view, for example, to install special windows to dampen noise, or indirect contributions, through donations and sponsorships of initiatives for the benefit of the entire community.

## Local communities engagement in Buenos Aires

The resident population around the work areas of the **Matanza Riachuelo** project exceeds **400,000 people**. The land involved in construction site activities is mostly made up of **residential** areas with extremely **diverse socio-demographic** characteristics and includes also industries, warehouses and commercial areas. For this reason, the management of the expectations and needs of local communities has been structured in a Social Management Plan, aimed at identifying and adopting targeted strategies for all types of stakeholders involved and focused on three main objectives:

- **Plan** construction site activities, considering the need to **minimise social impacts**.
- **Provide information on construction site-activities** and coordinate communication exchange with all stakeholders.
- Manage social conflicts (if any), including elements of **compensation to the local community**, where appropriate.

The project included elements of **internal training** at all levels and sharing with subcontractors of the main procedures on Social Management.

Between 2017 and 2019 **complaints received decreased by 75%**.

Some stakeholder engagement initiatives are managed directly by our clients with the local support of construction site personnel, such as the establishment of **visitor centres** that can be visited by schools or private citizens. These contain displays of informative materials on the various phases of construction and excavation, often offering the possibility of organizing visits to the construction site.

Our client BBT, for example, at the request of the Municipality of Fortezza and the Autonomous Province of Bolzano, contributed to the establishment of the Observatory for the construction of the Brenner Base Tunnel . The body aims to create an **interface** between the project and the District

Communities of the Val d'Isarco and Alta Val d'Isarco. Representatives of the communities are part of the management body of the Observatory and speak out for the concerns of the communities in all the various stages of construction. BBT has also created the **BBT-Infopoint** in the Habsburg fort of Fortezza, with a large exhibition area that touches on the technical issues related to the excavation, but also the themes of nature and culture that revolve around the project.

Our client Bane Nor in Oslo has also created a visitor centre which, among various informative materials, uses virtual reality to make visitors experience a 'journey' through the tunnel built by the Acciona Ghella JV and organises

guided tours at the construction-site for residents, schools and other local stakeholders.

The international extension of our activities, in 15 countries and 4 continents, requires great attention towards the **integration** of our expatriate staff in the local context: we take the opportunity to bring our unique company culture and generate mutual enrichment through interaction, inclusiveness and curiosity towards the other. With the same spirit, we **respect the rights and customs of indigenous peoples** and place them at the centre of activities that facilitate the integration of construction site personnel in new contexts.



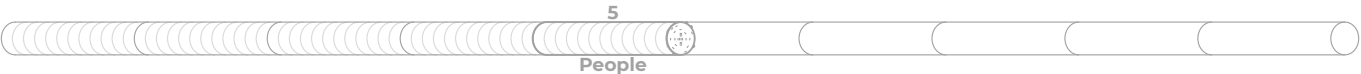
New Zealand, Auckland  
Hongi, traditional māori greeting

## Integration into Māori culture

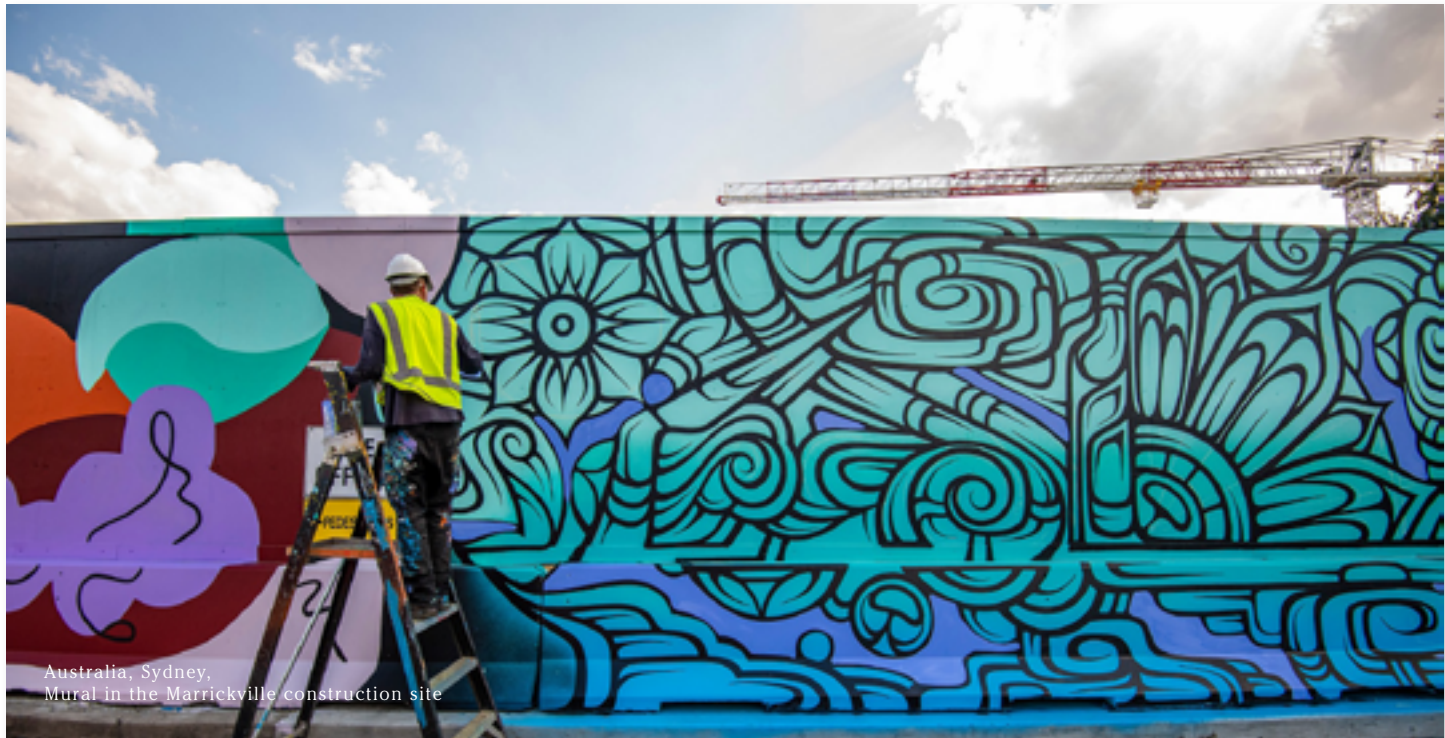
In our Central Interceptor construction site, which started during 2019, we have carried out a series of initiatives focused on **integrating construction site personnel into the Māori culture**: interactive language sessions aimed at promoting the use of Māori expressions in everyday communication and activities such as participation in the Māngere Mountain Challenge, a cultural initiative organized every year by our client Watercare where the participants in the competition can communicate exclusively in the “te reo Māori” (Māori language).



Norway, Oslo,  
TBM model in Follo Line's Visitor Centre







Australia, Sydney,  
Mural in the Marrickville construction site

## Bringing beauty to the areas where we operate

Given the large-scale construction activities associated to the excavations for the metro in Sydney's city centre, together with our partners John Holland and CPB Contractors we transformed the Marrickville construction-site into a gigantic mural, 125-meter long and 3-meter high.

A heterogeneous group of street artists led by artist Tim Phibs was selected to create the work. The mural represents, using effective symbolism, various elements including identity, native Australians, local flora and fauna and the culture of street art.

The Marrickville mural has thus transformed the area into an open-air work of art, serving as an element of urban regeneration benefiting the whole community.

## Consultation on the respite strategy

A large-scale **consultation** was conducted at the Sydney Metro City and Southwest project aimed at minimising the impacts of **noise** and **vibration** generated by site activities, in six of the ten construction sites of the project.

Over 3,000 residents, staff of companies and other organisations such as schools and kindergartens were consulted, by asking in which timeslots they preferred the construction breaks to be allocated. A so-called respite strategy was then defined which established work breaks based on the results of the survey: this was then communicated to the stakeholders.

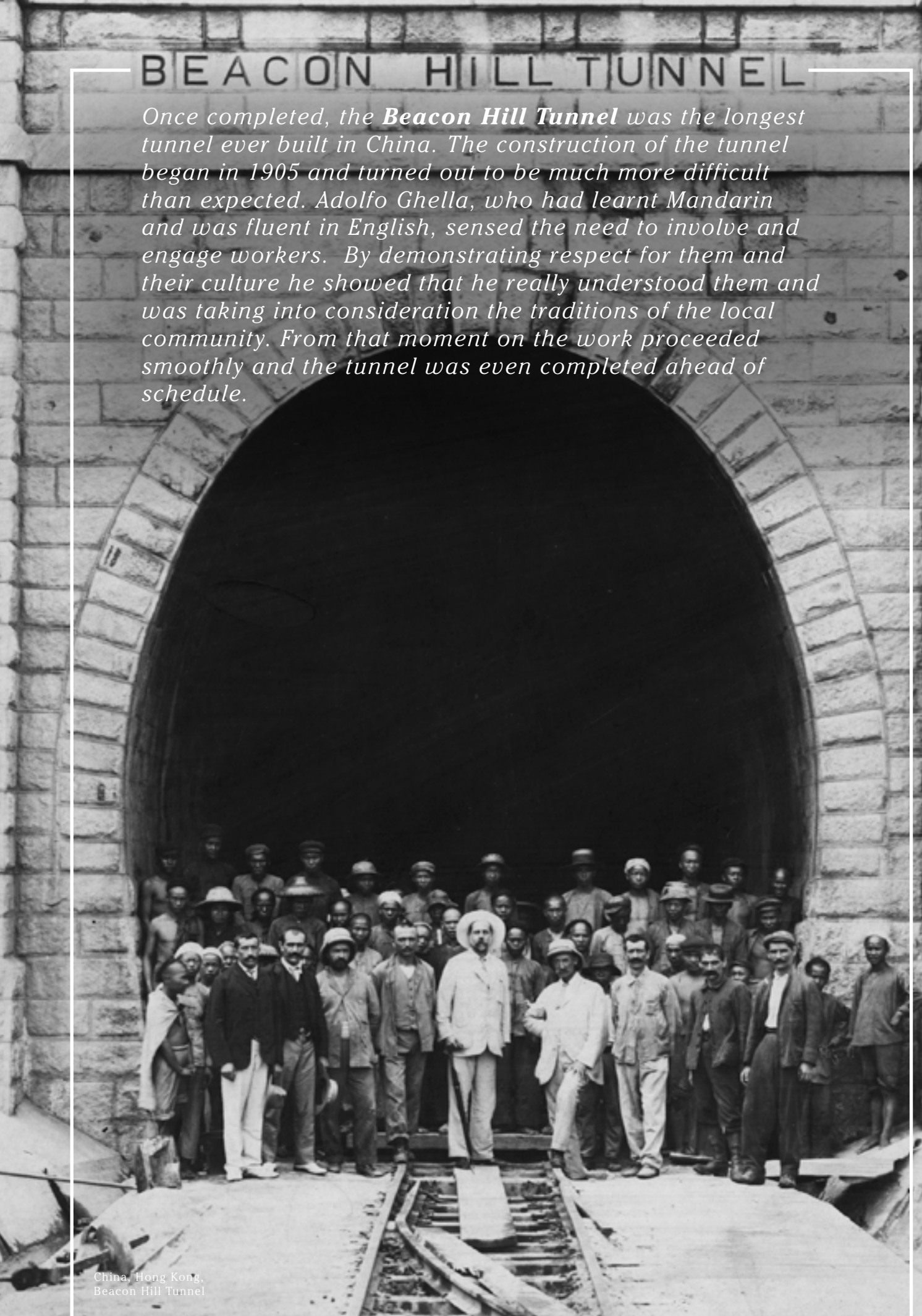
Solutions were sought that could respond to the needs of the majority and on which it was easier to find consensus where a compromise was needed. For example, most of the stakeholders favoured the idea of giving priority to the needs of kindergartens and schools during the hours of the afternoon nap and exams.

The success of this initiative was in the **planning of the engagement activities** of the local community and in the choice of conducting an individual consultation with stakeholders. Having established a good relationship with the stakeholders has ensured that they were motivated to collaborate and to accept the solutions proposed by the majority.



## BEACON HILL TUNNEL

Once completed, the **Beacon Hill Tunnel** was the longest tunnel ever built in China. The construction of the tunnel began in 1905 and turned out to be much more difficult than expected. Adolfo Ghella, who had learnt Mandarin and was fluent in English, sensed the need to involve and engage workers. By demonstrating respect for them and their culture he showed that he really understood them and was taking into consideration the traditions of the local community. From that moment on the work proceeded smoothly and the tunnel was even completed ahead of schedule.



China, Hong Kong,  
Beacon Hill Tunnel



*Value*





# Value

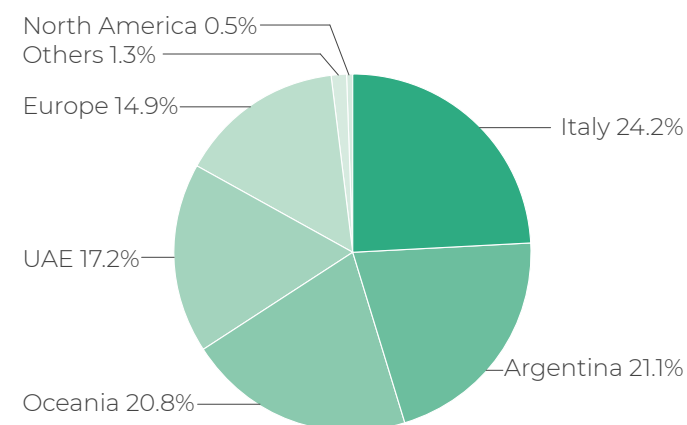
## Main financial results

**REVENUES**  
**€616** MLN

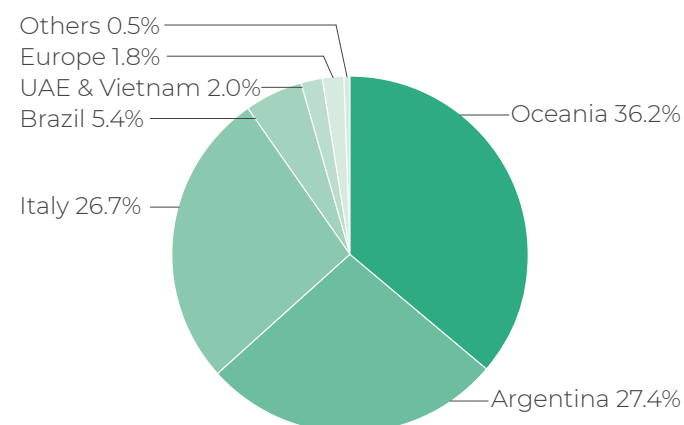
**EBITDA**  
**€91** MLN

**ECONOMIC VALUE  
GENERATED & DISTRIBUTED**  
**€659** MLN

The distribution by geographic area of revenues and of the work-portfolio for 2019 shows the international nature of our business, with over 75% of revenues and 73% of the work-portfolio carried out abroad.



Revenues by geographic area



Work Portfolio by geographic area

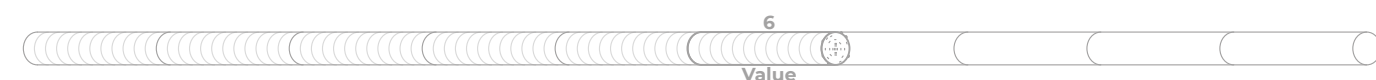


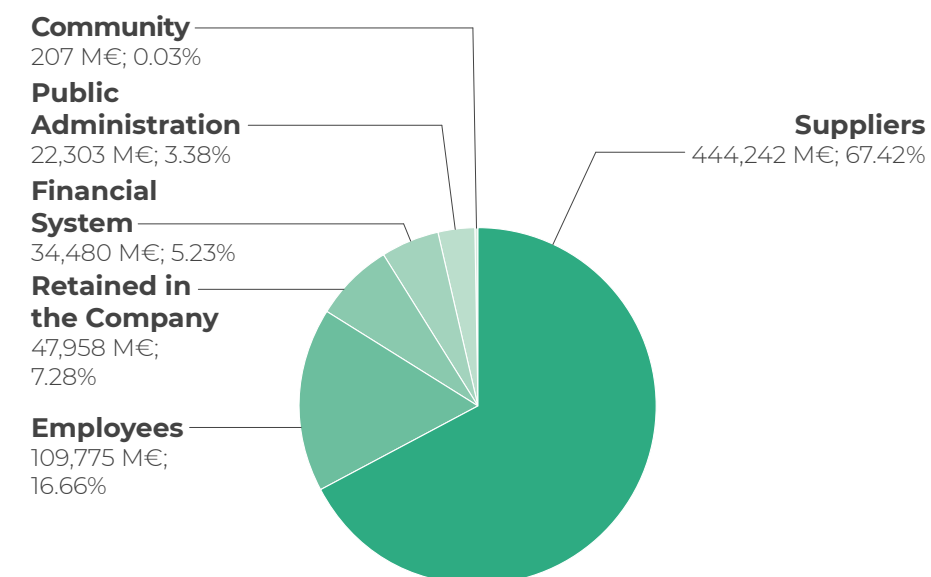
Photo by Marina Caneve from the photographic project "Di roccia, fuochi e avventure sotterranee"  
Greece, Athens,

## Economic value generated and distributed

The breakdown of Ghella's economic value generated and distributed was calculated through a reclassification of the Income Statement items of the 2019 Consolidated Financial Statement. In 2019, the economic value directly generated amounted to 658,965 million Euro and includes Revenues and Financial Income<sup>6</sup>. Most of this value, equal to 68%, is distributed to Suppliers, and includes purchasing costs and service costs. The value distributed to Employees follows with 17% of the generated economic value. The value distributed to the Financial System is equal to 5% and includes financial costs, gains (losses) from exchange rates and dividends to shareholders. The Public Administration received 3% of the economic value generated through income taxes and local taxes and duties. The Value Retained in the Company is equal to 7%. Finally, the value transferred to the

Community represents 0.03% with 207,000 euros given on donations and sponsorships. For further details on the nature of these expenses,

see the paragraph "Donations, Sponsorships and Membership to Associations".



Distribution of economic value



# Our supply chain

Supply chain management plays a key role in the construction industry. Suppliers of works, goods and services (hereinafter "Suppliers") are **key stakeholders** for us, whose performance can significantly affect the efficiency, quality and sustainability of our activities and of our construction projects.

Ensuring a **responsible and transparent management** of the supply chain is therefore an essential element to promote business sustainability and sustainable value creation in the territories where we operate.

In 2019 we have adopted a **Sustainable Procurement Policy**

which describes the key principles we adopt to extend our responsibility beyond the company boundaries, such as:

- ethical procurement;
- support for the circular economy;
- assessment of the ecological footprint of construction materials;
- protection of the environment also upstream of the boundaries of our construction sites;
- promotion of local purchases;
- compliance with working

## QUALIFICATION AND MONITORING OF SUPPLIERS

In 2019 we improved our **Supplier Qualification System**, enhancing the environmental and social sustainability criteria used to evaluate suppliers, in addition to the existing criteria relating to technical expertise, quality, safety and financial solidity.

The qualification of a new Supplier, previously identified during a market survey, begins with the request to subscribe to our platform **"Ghella Vendor list"**, where the supplier fills in the qualification questionnaire: successful suppliers are included in Ghella's List of Suppliers. In projects where the JV adopts the partner's qualification system, we verify that the qualification criteria are aligned with those included in our questionnaire.

In 2019, a total of **484 new suppliers** were contracted<sup>17</sup>, **40%** of which were qualified including environmental and social criteria.

A good sustainability performance is not only a requirement for

accessing our supply chain, but also a condition to be maintained and improved throughout the collaboration period and beyond: we work to gradually engage suppliers in our sustainability journey, working as a team and following common rules.

How do we do it?

- we include our principles and guidelines on environmental and social sustainability in purchase orders and contracts:
  - Quality, Environment, Health and Safety requirements
  - Sustainable Procurement Policy
  - Standard compliance clauses with the Code of Ethics
  - Anti-Corruption Guidelines, Guidelines on Human Rights, Italian Model 231
- we periodically monitor the performance of suppliers, by assessing their consideration for

conditions standards for our workforce;

- respect for diversity within our workforce;
- engagement of suppliers and subcontractors in our sustainability journey.

These principles are also reflected in our **corporate Sustainability Plan**, where they are turned into defined objectives, actions and targets, specific to the supply chain.

aspects of environmental, social and economic sustainability;

- organise sample audits on suppliers, to check whether the qualification requirements stated in the questionnaire are actually met, and on the procurement departments of our own construction sites, in order to verify that the qualification and monitoring processes are conducted in line with our corporate procedures;
- train our buyers, both in our Headquarters and on site, and keep them updated on the sustainability criteria introduced at the corporate level;
- involve suppliers in corporate sustainability projects (in 2019, a sample of suppliers was included in a consultation conducted as a part of the Stakeholder Engagement process that fed into our Materiality Matrix).

# Innovation



Our expertise is dynamic and evolves through self-assessment. We constantly test ourselves when we face engineering challenges and look for solutions that allow us to carry out work safely and to promote know-how retention.

Excellence in the realisation of construction projects is a distinctive trait that positions us in our reference market for our in-depth specialisation. Through the continuous search for innovative construction solutions our specialised expertise places us on a path of constant improvement of the quality standards of our projects, guaranteeing safer working conditions.

Most of the operational innovations are developed within the construction-sites, where new solutions are tested on a daily basis

to achieve the best results. Over the last few years, as well as in 2019, research has been carried out in various areas, including:

- applied research and validation of new technologies, materials and concepts, and the filing and management of patents (i.e. automatic rib);
- design and development of modifications to the TBM, jointly with the major TBM manufacturers at a global scale, as well as to safety procedures with the aim to allow work in the presence of gas.

## The automatic rib: innovation for on site safety

In 2014, during the upgrading works of the A14 motorway between Ancona North and Ancona South, in Italy, Ghella tested, built and patented the so-called **Automatic Rib**, designed by Francesco Palchetti.

The Automatic Rib has the potential to significantly reduce the **risk factors** related to the presence of workers on the excavation face during the rib positioning phase in the excavation of **traditional tunnels**. This is because an operation typically conducted by 4-5 workers, close to the excavation face, with an automatic rib can be conducted by a **single operator** who maneuvers a specially designed lift from inside a cabin. The rib is made in such a way as to avoid the laying of the chains, the laying of the electro-welded mesh and the tightening of the bolts.

Operations at the excavation face are reduced to just fixing the rib on the appropriate hooking supports. A camera assists the operator who, from inside the cabin, can make corrections and improve the accuracy of the installation.

In addition to the potential positive implications on **safety**, the introduction of the Automatic Rib has reduced the laying **operating times** from about 60 to **15 minutes**, thus also improving excavation productivity.

The Automatic Rib was presented at various events to promote the knowledge of its potential and its adoption among design teams and contracting authorities. In 2019 it was presented to the **NZTA - New Zealand Tunnel Association** - to raise awareness among local companies about the advantages of this innovative system. It was also the subject of a publication presented during the **World Tunnel Congress 2019**.

## IT tools & knowledge sharing

Over the years we have equipped ourselves with a series of tools aimed at making production control more precise and improving the flow of information between the headquarters and construction sites around the world.

We have developed a monitoring system, called **Production**, supporting two sectors that are strategic for us: **Excavations and Renewables**. The system allows site engineers to have all the information on the excavation face in a smartphone, updated in real time. This tool has made it possible to limit the use of large email attachments that reported only partial information, offering instead a platform where the **information is univocal** and personalised.



Production news is also spread through the **Ghella app**, designed to simplify data searches and reduce the use of information emails. The app allows reserved and profiled access to news from the world, production data, tender information and all the various other systems used within our Group.

## RELATED LINKS



Sustainable Procurement Policy



Corporate Sustainability Plan



Sito Ghella, Etica e conformità



Sito Ghella, Il nostro approccio





# Donations, sponsorships and membership to associations

We are aware of our social responsibility and have adopted a **Sponsorship and Donation Plan** used to support initiatives that reflect our values. Our commitment is expressed through **three types of actions**:



## DONATIONS OR LIBERAL DISBURSEMENTS



## SPONSORSHIPS



## SOCIAL INVESTMENTS

Our actions are aimed at achieving two strategic objectives: **philanthropic support** and **shared value creation**. We have decided to focus on **6 different areas**, each of them contributing to the development and growth of the communities where we operate:



**Charity**, i.e. support for organisations that carry out **social assistance and solidarity activities**, and associated employee awareness raising on the causes supported by the Company. These include the donations to the **Bambin Gesù Hospital** and to the **Onlus “Casa della Mamma” (Mother’s House) in Rome** and the support to **Bear Cottage Children Hospice in Sydney**.



**Culture**, through the support to **cultural excellence** in Italy and in the world, such as donations to the **Accademia di Santa Cecilia in Rome** and the donation made in 2018 to support the tour of the **Teatro alla Scala of Milan in Australia**, at Queensland Performing Arts Center.



**Public relations**, to promote our Mission and Vision through our stakeholders. In 2019 we sponsored the **World Tunnel Congress** held in Naples: the largest annual event for the world of underground works. In this context, we were awarded for the best Eco-Friendly stand and for the best presentation through e-Poster.



**Education and Training**, investing in **first level and specialist Masters and Degree courses**, in order to transmit our passion and competence to future generations; for example, we sponsored the Master for Business Engineers of *Dirextra* Business Formation and the level II Master in “Tunnelling and Tunnel Boring Machines” of the Turin Polytechnic, to name a few.



**Art**, because in Ghella we believe that **freedom of expression** helps us to open-up to imagination and avoid prejudice. The street artist Lucamaleonte has created a mural on the walls of our headquarters, portraying animals representing the countries where operate. A work that has brought our community closer to art.



**Environment**, because we believe that **greater care** is needed towards the places where we live and work: for this reason, we have been supporting FAI, the Italian Environment Fund, FAI is a foundation for the protection, safeguarding and enhancement of Italian natural and artistic heritage.

## Art in Ghella

We have invested in **art projects that have generated new perspectives** and have allowed us to express our passion for beauty and quality.

Street-artist **Lucamaleonte** created a work in the internal courtyard of our headquarters, giving new life to a concrete wall, that was transformed into a pictorial garden on which various species of animals stand out: each animal ideally represents a country where we operate. The result is a new feeling of harmony, which transformed a common space into a place of well-being and beauty, bringing all Ghella sites back to a single imaginary place.

We have commissioned the artist and engineer **Lorenzo Mariotti** 27 works depicting the fleet of TBMs (Tunnel Boring Machines) that have excavated or are still excavating in our work sites around the world. Each work depicts a machine using a meticulous hyper-realistic technique that confuses the viewer by making him believe he is in front of a photograph.



Italy, Rome, Mural at Rome's headquarters



Australia, Sydney, Fundraising event for the Bear Cottage Children's Hospice

Consistently with our sponsorship and donation policy, **we actively support associations** with whom we share ideals and goals.

We are long time members of the **Società Italiana Gallerie** (Italian Tunnelling Association), an association that for over 40 years has been involved in the promotion, coordination and dissemination of studies and researches in the field of tunnel construction and large underground works.

We are members of ANCE, the *Associazione Nazionale Costruttori Edili* (National Constructors Association), in which **Federico Ghella**, our Deputy Chairman, holds the

role of **Vice President and President of the Committee for Works of Foreign Countries**.

As ANCE members, we are represented by our Head of Institutional Relations on the Board of Directors of the European International Contractors (EIC), a European federal association that groups together the major construction companies operating at an intercontinental level.

Since 2019, we are members of the **Green Building Council Italy**, which promotes the spread of a culture of sustainable construction.





# Environment

Italy, Brenner.  
Photo of the area above the Brenner site tunnels  
Photo by Andrea Botto from the photographic project "Di roccia, fuochi e avventure sotterranee"





# Environment

In line with the Environmental Policy, the Sustainability Policy and the Corporate Sustainability Plan, we operate according to high sustainability standards with the aim of reducing the **environmental footprint** associated with the construction phase as much as possible, while preserving the richness of the local ecosystems and becoming active players in the global challenge to mitigate Climate Change.

Proper management of environmental issues has always been at the centre of our *modus operandi* and is formalized through the adoption of an **Integrated Management System**, whose environmental component is certified in accordance with the international standard **ISO 14001: 2015**.

The system adopts a Risk-based-thinking approach and aims to ensure that since the planning stage all our worksites carry out an assessment of the **Significant Environmental Aspects**<sup>18</sup>, i.e. all elements of our activities that interact with the environment and that can generate impacts on it, both in standard conditions and in potential emergencies.

Generally, among the significant environmental aspects that we

keep under control in our worksites to prevent potential local direct impacts, we find:



**Water management and protection**



**Management and protection of the soil and subsoil**



**Emissions into the atmosphere/dust**



**Noise**



**Protection of Biodiversity**



**Asbestos management**



**Vibrations**



**Waste management**



**Management of hazardous substances**



**Landscape protection**



**Management of historical, architectural and archaeological heritage**



**Vehicular traffic**

We also quantify and monitor the environmental aspects that under normal operating conditions generate indirect impacts on a global scale, such as the contribution to the Depletion of Resources and **Climate Change**, in order to reduce them over time:



**Consumption of raw materials and natural resources**



**Energy consumption**



**Greenhouse Gas Emissions (Scope 1 - 2)**

The methods for managing and monitoring the environmental aspects that result significant for a specific worksite are then defined within an **Environmental Management Plan** and, in some cases, a **Sustainability Management Plan**, in order to prevent or mitigate the related impacts.

**Planning** of environmental management aspects within Project Plans takes into account as a minimum **local legislation, contractual requirements, objectives** and **targets** set by the client for the works. In addition, we apply our Sustainability Policies and Plan to all our projects. This confirms our commitment to exceeding local expectations, adopting the same **sustainability standards** at a global level, and to continuously improving our **corporate environmental performance** over time.

During the **construction** phase, our teams manage significant environmental and sustainability aspects through operational control and continuous monitoring. Other site activities are targeted training of the staff, audits and periodic inspections, analysis and resolution of environmental non-conformities and reporting of project performance as part of the periodic reporting to clients and to the headquarters.

This flow of information allows us to monitor environmental performance also at the corporate level, both on individual projects and as consolidated data on all our projects globally.

Consolidated **data, information** and **environmental performance**<sup>19</sup> for the year 2019 are described in the next paragraphs, with a focus on the aspects that resulted a priority in our Materiality Analysis.

## RELATED LINKS



Environmental Policy



Sustainability Policy



Corporate Sustainability Plan

## Sustainability rating at the project level: IS

*Our strategic choices have led us to work in countries where sustainability is a consolidated cornerstone of national culture such as Norway, Australia or New Zealand. This approach is also reflected in the infrastructure sector, where challenging objectives and targets throughout the life cycle of the works are applied by clients.*

*A tangible example of this can be found in the use of the Infrastructure Sustainability (IS) rating system in our projects **Sydney Metro City and Southwest** and **Cross River Rail**, in Australia, and **Central Interceptor** in New Zealand. The IS rating system was developed by ISCA (Infrastructure Sustainability Council of Australia), a non-profit organisation focused on sustainability in the infrastructure field. IS is the only comprehensive rating system in Australia and New Zealand assessing the sustainability of infrastructure projects in the planning, design, construction and operational phases of the works.*

*The Central Interceptor project, started in 2019, is accredited to ISCA version 1.2 and has an "As-Built" target of "Excellent", to be achieved upon project completion. The rating requires the definition of a Basecase that includes the calculation of the carbon footprint of the project design. This is set as the baseline against which improvements are measured to reach the score requested by the client.*

*The Sydney Metro City and Southwest project is currently our most advanced project in the IS path: in 2019 it obtained a score of 100.05 / 110, the highest ever assigned by the IS rating and which gave the John Holland CPB Ghella (JHCPBG) JV the rating "Leading" for the Design of the TSE (Tunnel and Station Excavation) works.*

Norway, Oslo  
Photo by Fabio Barile from the photographic project "Di roccia, fuochi e avventure sotterranee"





Energy consumption and greenhouse gas emissions

7

13

Consistently with our Policies and our corporate Sustainability Plan, we are committed to increasing Energy Efficiency and reducing greenhouse gas emissions (GHG).

Construction work and activities in site operational areas involve the consumption of energy resources, that we constantly monitor. This consumption is associated to activities carried out by both Joint Venture employees and subcontractors working on-site.

In 2019 we recorded an overall energy consumption in our construction sites of **1,090,516 GJ** - corresponding to an energy intensity of **66 MJ per hour worked** - broken down as follows:



Electricity Consumption

It is the main source of energy supply in our sites, generally used for the operation of construction machinery and to power offices and base camps, in particular lighting, IT equipment and heating / cooling systems.



LPG Consumption

It can be used to produce steam, for heating and domestic hot water in offices and base camps and for the canteen service.

Generally, our construction sites are connected to **local electricity networks** and we favour the purchase of electricity to limit local emissions. Our Dewa III site, located in the Dubai desert, is the only exception within the 2019 reporting scope. There, energy is produced using diesel-powered



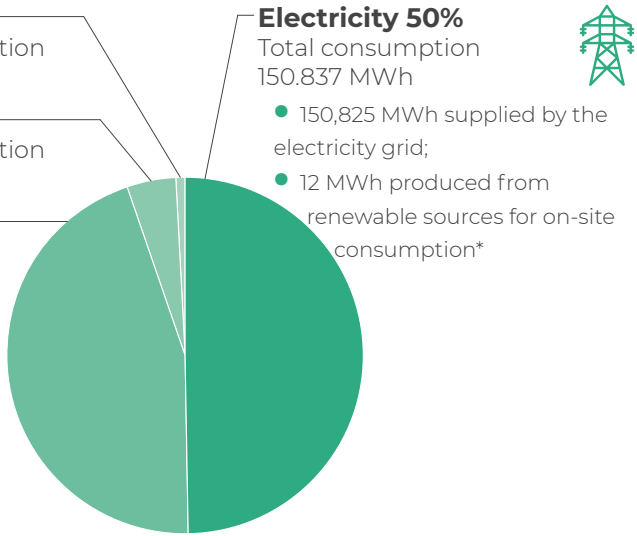
**Petrol 1%**  
Total consumption  
166 kL



**LPG 4%**  
Total consumption  
2,049 kL



**Diesel 45%**  
Total consumption  
13,666 kL



Energy consumption by source (breakdown in GJ)

\* 12MWh produced in the Sydney Metro City and Southwest site using a photovoltaic plant.



Diesel Consumption

It is the second source of energy supply and is generally used for the operation of generators and construction equipment, for heating and domestic hot water in offices and base camps and for the car fleet.



Petrol Consumption

It is used as a fuel for the car fleet and for construction vehicles.

generators and this clearly affect our consumption data for this fuel in 2019.

In addition to energy consumption, we monitor the related **greenhouse gas emissions** and we distinguish between those emissions generated by the production of energy on site,

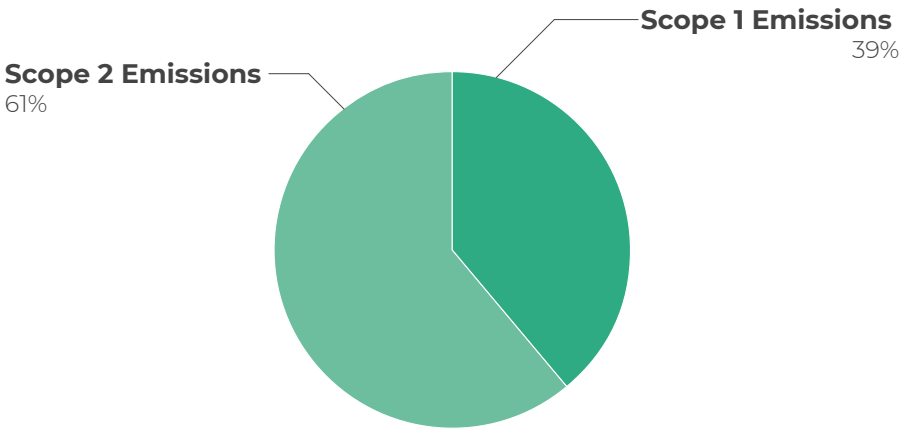
through the combustion of diesel fuel, LPG and petrol (Scope 1), and those related to the purchase of electricity from the grid (Scope 2). The latter are generated upstream by energy plants and can vary significantly according to the energy mix of the countries<sup>20</sup> where we operate.

RELATED LINKS



Corporate Sustainability Plan

In 2019 we produced a total of **103,810 tCO<sub>2eq</sub>** related to energy consumption - corresponding to an intensity of greenhouse gas emissions equal to **6.3 kgCO<sub>2eq</sub>** per **hour worked** - broken down as follows:



Greenhouse gas emissions Scope 1 and Scope 2

Most of our greenhouse gas emissions are produced upstream.

Below we highlight some examples of **energy saving** and **emission quantification and reduction initiatives** implemented up to 2019:

- installation of LED lighting systems in tunnels and offices;
- use of efficient machinery and ventilation systems in tunnels;
- use of an electric conveyor belt to move the excavated material out of the tunnel, rather than by truck;
- offsetting 25% of the energy

consumption of the Sydney Metro City and Southwest site through the purchase of green energy certificates, which in 2019 amounted to 13,208 MWh from renewable sources;

- renewable energy production, through the installation of a 13.2 kWp photovoltaic system at the Sydney Metro City and Southwest site;
- development of EPDs (Environmental Product Declarations) for concrete and bi-component materials produced at the Follo Line site,

including the quantification of the carbon footprint related to the life cycle of these building materials;

- LEED (Leadership in Energy and Environmental Design) Platinum v4 certification from the Green Building Council for the new conference room of the Rome office.
- conversion of the car fleet of the Rome office with 34 hybrid cars and 2 electric vehicles.

The Brenner conveyor belt system

Logistics in a tunneling site is affected by the large quantities of excavated material (spoil). At the **Brenner** site it was decided to mechanise and automate the transport system of the spoil, in order to reduce external impacts, by avoiding transport by road as much as possible and keeping the transport of waste materials within the site boundaries.

This was achieved through the installation of a **conveyor belts system**, over **76 km** long and powered by electric engines with a nominal Power of 15 MW, which convey the spoil of all excavation works towards areas dedicated to temporary / permanent storage or areas where the material is reused as secondary raw material.

Transporting the spoil by means of an electric belt system, rather than by truck, has made it possible to avoid the production of **local atmospheric emissions**, to significantly reduce the production of **dust** and to avoid the impact of site activities on **vehicular traffic**, thus minimising the impacts on local air quality and limiting disturbance to the local community.





# Resource protection



We are aware that the material and natural resources we use in our production activities, or with which we interact, are not unlimited and are of great value.

Our approach to water, materials and biodiversity resource management follows:

## WATER

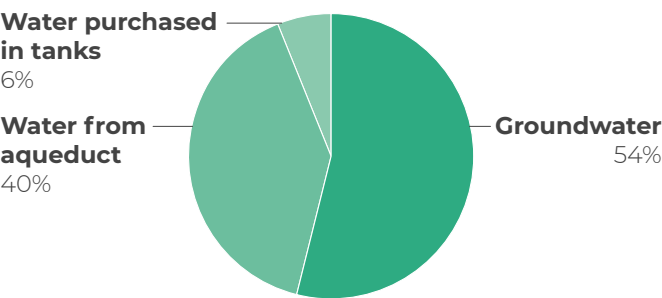
We are aware that water resources are a precious asset, hence we promote their efficient use and guarantee the protection of the quality of groundwater and surface water.

In all our **construction sites**, water withdrawals take place in compliance with local authorisations, obtained for the extraction or the derivation of water from water bodies or public aqueducts. They are monitored and guided by resource saving principles, so to avoid any interference with the local water balance.

Our water **requirements** are mainly associated to dust suppression activities, consolidation of the soil, cooling of the TBMs and concrete production.

In order to limit the volumes of water externally withdrawn and reduce our water footprint, we implement, where possible, eco-design criteria aimed at **saving water** from the design stage.

In 2019 we sourced externally a volume of water equal to **1,612,097 m<sup>3</sup>**. This corresponds to a water consumption intensity equal to **0.1 m<sup>3</sup>** per hour worked and is broken down as follows:





Breakdown of water consumption by source of supply

**Wastewater** from our construction sites is made of the water residue from site activities that has not been reused, the runoff water from the worksite and the wastewater generated by offices and base camps.

In order to avoid potential alterations in water quality, we guarantee compliance with the discharge requirements contained in the authorisations issued by local authorities. We do so by periodically sampling and analysing the quality parameters of the treated wastewater, according to a careful monitoring plan, through samples taken upstream of the discharge point. This may take place in the **sewer** and / or in

## Water saving methods

 **reuse in tunnelling activities of water generated during the excavation, following treatment**

 **closed loop recirculation line of the TBM cooling water**

 **water recovery systems installed at the segment factory**

 **collection and recovery of rainwater through accumulation systems**

**surface water bodies**, depending on local conditions (e.g proximity to the sewer).

We pay utmost attention in **preventing potential accidental damage** to the water and soil compartments, through the selection of products we use and the application of operating instructions and containment and waterproofing measures. Potential accidental damage in our construction sites may be associated to:

- pollution caused by: suspended solids, generated by the excavation works; washing of site surfaces; washing of vehicles
- pollution due to the dispersion of cement components during concrete processing activities
- pollution caused by hydrocarbons and oils, due to leaks from construction site vehicles and the handling of fuels and lubricants.
- accidental discharges of pollutants into surface waters or onto the ground.

In the case of our **Matanza Riachuelo** and **Central Interceptor** projects, the completed infrastructure will in itself bring water related benefits to local territories. In particular, the projects will enhance the management of discharges, will reduce spills and will protect the quality of water, as explained in the Chapter **"Our Sustainability Journey"**.

# Profile



## Stefania Mattea

*Sustainability Coordinator,  
Central Interceptor, NZ*

### What is your career path and what brought you to Ghella?

*I have been living in New Zealand for several years, where I have collaborated on academic research projects in environmental economics. Working for an Italian company that was building such a large-scale infrastructure, while being one of the first New Zealand*

*projects to submit a sustainability rating, was a decisive factor in my choice to join the project.*

### Can you briefly describe your role?

*My role is Sustainability Coordinator, a role that has recently been introduced into the construction sector. I coordinate and support the implementation of sustainable solutions within the design and construction site activities, in line with the Corporate Sustainability Plan and project plans. I would define my role as very diverse, a key aspect being the ability to inspire and positively influence other teams in promoting sustainability.*

### What is the most stimulating aspect of your job?

*The most stimulating aspect is the role diversity; asking questions, encouraging reflection and suggesting possible solutions are key aspects of that. I get the opportunity to work with a range of different people from varying backgrounds. It allows both personal and professional enrichment.*

*I enjoy the idea of working on a project like the Central Interceptor that will leave a positive impact on the environment and improve the quality of life of the local community.*

### What does 'on-site sustainability' mean for you and what are the key functions to involve in order to be successful in this endeavour?

*To me it means facilitating the integration of sustainability aspects within all areas of the project. The objectives are long-term and everybody involved in the project plays a crucial role in achieving them, from the senior leadership team to temporary subcontractors.*

### Describe your typical day at work.

*Every day is different! The activities on-site are aimed at promoting a sustainable culture within the workforce, through toolbox-talks, training and weekly inspections. Our corporate culture is centred around belonging and inclusivity. An example of this is the company canteen, where our multicultural team gathers to eat pasta "al dente"!*

New Zealand, Auckland  
Central Interceptor





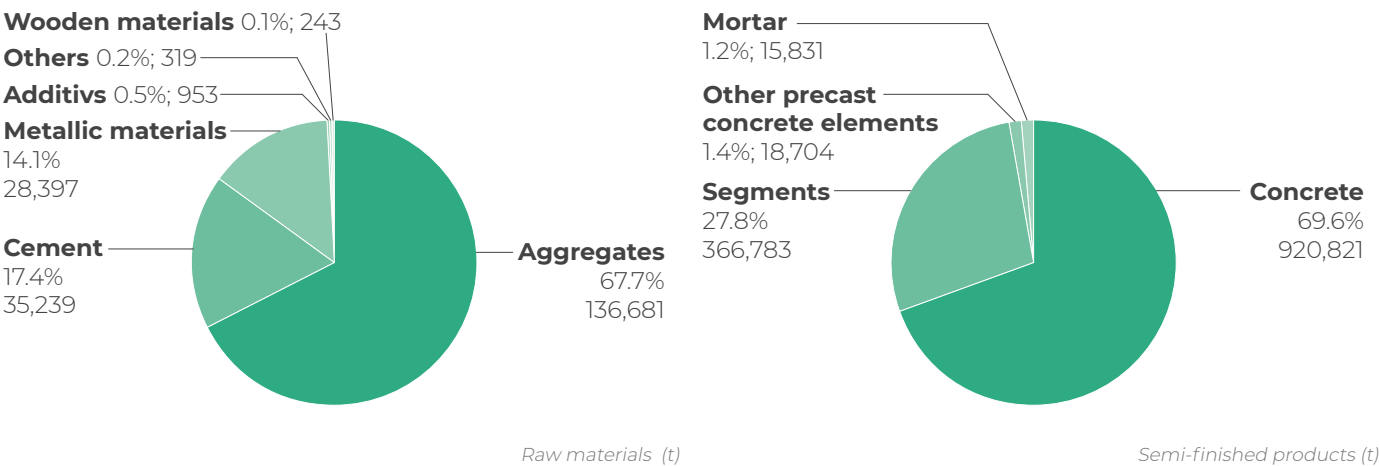
MATERIALS

Due to the specific nature of the activities performed, our construction sites entail a significant demand for materials. In line with our Sustainability and Sustainable Procurement Policies, we promote a sustainable management of materials, with the aim of limiting global raw material depletion and reducing the environmental footprint associated with the supply of goods, by applying the following principles:

Sustainable management of materials

- Reduce the consumption of materials and minimise waste
- Consider their environmental footprint in the selection phase
- Give preference to materials with the highest benefits for the circular economy
- Encourage reuse on site

In 2019 we procured a quantity of construction materials equal to **1,523,969 t** - which corresponds to a material consumption of **0.1 t per hour worked**.



Most of the materials used come from non-renewable sources; materials from renewable sources such as wood make up 0.02% of raw materials. The main raw material is **aggregates**, while the most significant semi-finished product is **concrete produced on site**. Where possible, we favour on site production, providing for the installation of concrete batching plants and segments factories. In

this way, we can have direct control over production and as a result greater control over costs, process efficiency and related impacts (there are no impacts related to transport in this case).

Other best practices that we have implemented so far to reduce the supply of materials are:

- Identify solutions, in the design phase, to reduce the quantities of concrete required
- Provide recovery systems for concrete scraps during production

- Reuse temporary base-camp accommodation
- Use recycled crushed rocks and aggregates and reuse the crushed rocks generated on site
- Produce or request from suppliers EPDs of the main construction materials, to learn about their environmental (and carbon) footprint throughout their life cycle.

RELATED LINKS



\*Sito del Sistema EPD Internazionale



Norway, Oslo,  
Photo by Fabio Barile from the photographic project  
"Di roccia, fuochi e avventure sotterranee"

Quantification of the impacts of our materials

In order to comply with a requirement of Bane NOR, our client for the Follo Line project, a **Life Cycle Assessment (LCA)** was conducted on two key building materials - **ready mix concrete and bi-component mixture** - produced directly on site and used by the JV AGJV (Acciona - Ghella).

The study quantifies the environmental footprint of concrete "from cradle to gate" - i.e. including the extraction and processing of raw materials, transport, on site processing of the material - and the environmental footprint for the bi-component mortar "from cradle to grave" - i.e. including also the construction phase and end-of-life phases.

The results relating to each material have been certified and shared externally through an **Environmental Product Declaration (EPD)**. This is an "environmental identity card" that informs about the performance of the product in relation to a series of impacts, including the "Contribution to Climate Change". In particular, the greenhouse gas emissions relating to 1 m<sup>3</sup> of concrete are equal to 361.20 kgCO<sub>2eq</sub>, while those relating to 1 m<sup>3</sup> of two-component mortar are equivalent to 75.9 kgCO<sub>2eq</sub>.

The information on the production processes of the two materials, the results on the relative environmental impacts and the methodology applied to obtain them, have been disseminated through a platform for public use ([www.environdec.com](http://www.environdec.com), the official website of the EPD System International System). In addition to obtaining a better understanding of the environmental performance of the materials used in our project, this study has produced certified emission factors that could potentially be used by anyone, hence contributing to further scientific progress on life-cycle assessment.

In addition, some suppliers have produced EPDs following the request of our JV: in this way, we have extended our responsibility beyond the company boundaries, by promoting best practices for the quantification of environmental impacts in our value chain.





## BIODIVERSITY

We are committed to preserving the richness of **local ecosystems**, ensuring the protection of the biodiversity of the natural areas where our construction sites are set, using appropriate measures for the prevention or mitigation of impacts on vegetation and animals.

### Measures for the protection of vegetation

Before the construction site is in place, we carry out investigations aimed at **identifying any relevant plant species**, for which it may be necessary to develop a **specific management and monitoring plan**

We limit the removal of **indigenous vegetation** to the amount necessary for construction to **limit the impacts on land** use, so to minimise the risk of erosion and sedimentation problems.

We map and mark the vegetation to be conserved

We guarantee the restoration of the vegetation at the end of the construction activities

### Measures for the protection of animals

Before the construction site is in place, we carry out investigations aimed at identifying any relevant **animal species**, for which it may be necessary to develop a **specific management and monitoring plan**

Before removing the vegetation, we guarantee the **relocation of the animals** found within the site boundaries in a suitable habitat, in areas far enough from processing activities but not too far from the original location and characterised by the same vegetation

In case injured animals are found during the cutting of the vegetation, we provide for the **transport and treatment at veterinary centres** previously identified.

Argentina, Buenos Aires,  
Cleaning at Dock Sud for the World Environment Day

### Protection of biodiversity in Buenos Aires

The staff of the **Matanza Riachuelo** construction site, in Buenos Aires, celebrated the 2019 **World Environment Day** with the **cleaning of the Dock Sud beach**, in front of the construction site, where the Riachuelo river flows: the industrious team of volunteers removed **over 50 m<sup>3</sup> of plastic** from the beach, **restoring environmental** decor, to the benefit of local biodiversity. The awareness initiative has strengthened **cohesion**, a sense of **belonging and awareness** of the importance of teamwork.

Also, in the Villa Lugano district of Buenos Aires an important green restoration project, including replanting with native trees, took place in the area of Parco de la Victoria, a site impacted by construction work activities. The initiative saw the participation, among others, of the World Bank, Ghella and AySA.

### Wildlife protection in DEWA

We conducted a **translocation** program of the wild species that inhabited the areas designated for the DEWA Phase III PV Solar Power project, in an area of approximately 20 Km<sup>2</sup>. The project involved mammals - including Arabian Gazelles, Desert Hares, Cheesman Gerbils - and reptiles - including Egyptian Uromastics, Sand Fish, Agame, Sand Geckos.

The animals were surveyed, and information were recorded on the species, on their number and the state of their health. The **collection and transport** were carried out in line with the best practices for each species, without causing stress to the animals and ensuring their safety during the transfer.

All the animals were introduced to the nearby **Al Marmoum Nature Reserve**, the largest unfenced nature reserve in the UAE, rich in native wildlife and known for its admirable sustainability initiatives. The translocated animals therefore live in conditions of **freedom and well-being**.



United Arab Emirates, Dubai,  
Arab Gazelles at the Al Marmoum Nature Reserve<sup>21</sup>







United Arab Emirates, Dubai,  
DEWA III photovoltaic plant

# Waste and excavation materials



## WASTE

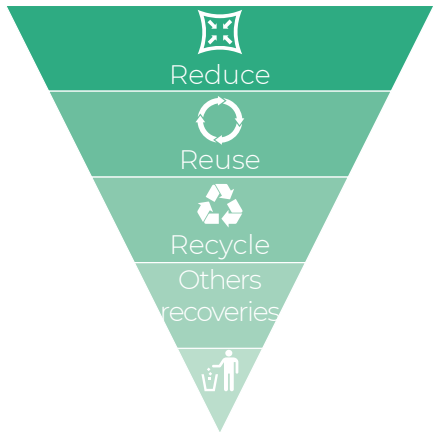
We are committed to reducing waste production and optimizing its management, by applying the following hierarchy based on the so-called “3R” (Reduce, Reuse and Recycle).

Plan for the use of less raw materials since the design stage and during production. Reduce hazardous materials from the start.

Extend the use of the assets. Keep clean, maintain and repair machines and work tools.

Transform waste into new resources to be used in the production process.

Recover energy from waste using combustion or other types of treatment. Send waste to landfill or incinerate without energy recovery.

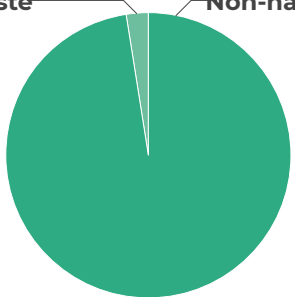


On our sites, we mainly produce construction and demolition waste, vegetation waste, municipal waste from offices and base camps and waste deriving from the maintenance of vehicles and machinery.

In 2019 we produced a total of **107,954 t** - which correspond to a production of waste equal to **6.5 kg per hour worked** - of which only **2%** is classified as Hazardous, as a result of the great attention paid to the selection of substances and products employed on our construction sites.

**Hazardous waste** 2% 2,453

**Non-hazardous waste** 98% 105,501



Classification of waste produced (t)

In 2019, our efforts to favour practices of **reuse and recycling** led to a positive result with **55% of non-hazardous waste** and **3% of hazardous waste** reused and recycled.

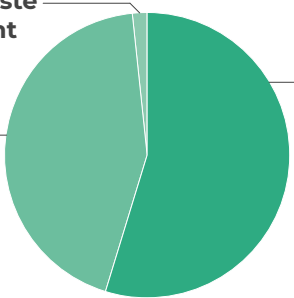
**Authorised waste treatment plant**

1.5% 1,605

**Landfill**

43.5% 45,920

**Reuse, recycle or recovery** 55% 57,976



Non-hazardous waste by disposal method (t)

**Reuse, recycle or recovery**

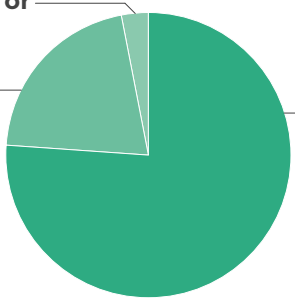
3%; 68

**Authorised waste treatment plant**

21% 511

**Landfill**

76% 1,863



Hazardous waste by disposal method (t)

## EXCAVATION MATERIALS

We are committed to maximizing the reuse of **excavation materials** produced during processing, where suitable, according to local legislation:

- **on site**, for the formation of back-fillings and embankments, remodelling, land or road improvements, as topsoil for green mitigation interventions or for other forms of environmental restoration and improvement
- **off-site**, as a secondary raw material in other supply chains or in other construction projects, generating benefits for the circular economy

In 2019, **9,233,580 t** of excavated material were produced, of which **99.6% is uncontaminated** and reusable and only **0.4%** is contaminated and therefore sent to recovery and disposal plants.

**99.8%** of the uncontaminated **excavation material was reused** on site or transferred to open-air deposits which, at the end of the works, will be reintegrated into the environment through replanting interventions. In the case of the Sydney Metro City and Southwest project, the excavated material was also reused externally, as input materials for other projects.

## Separate to recycle: packaging project in DEWA

The construction phase of the DEWA Phase III PV Solar Power Project, in the United Arab Emirates, involved the purchase of a large number of photovoltaic panels, generally transported by the supplier using **multi-material pallets** and therefore **not directly recyclable**. In 2019 alone, the “GRS, ACCIONA, Ghella” JV purchased **968,500 photovoltaic panels** whose **packaging** is the main component of the waste produced by the site.

The JV has implemented a process of **separating the packaging into its various elements** and recycling them at specialized local companies. The process involves about **40 people who work** in an area of the site dedicated to the separation activity, allowing the **recycling of over 1,000 tons of wood per year**.

## Spoil management in Sydney Metro City and Southwest

In our **Sydney Metro** project, delivered by John Holland CPB Ghella, waste becomes a raw material for other construction sites: **100% of the uncontaminated** spoil generated by the tunnel excavation – 2,350,000 m³, equivalent to 752 olympic swimming pools – is **reused in over 100 projects** in the Sydney area, contributing to the construction of roads, homes and airports. In particular, more than 500 thousand tons of sandstone, extracted from the heart of the city, will become part of the airport runway of Sydney **Western International Airport**, due to open in 2026. The synergy between Sydney Metro and local projects represents a virtuous example of circular economy in the world of construction.

Particular attention was also given to the means of **transport used for the spoil**, which was mainly handled by barges travelling across the bay. Spoil barging has removed trucks from busy CBD streets and quiet residential areas, avoiding about 40,000 truck-and-trailer movements over 26-months. This has **social benefits** through mitigating impacts on traffic congestion, while benefitting the environment through reduced emissions from increased idling time of trucks in traffic. Barging will save about 1,000 tons of greenhouse gas emissions.

All these challenges were reflected in **community and stakeholder** concerns expressed during the early project planning phase, with numerous submissions received about truck movements and spoil-reuse opportunities. Sydney metro’s spoil management has been **awarded as “Environment and Sustainability Initiative of the Year”** at the New Civil Engineer Tunneling Festival 2019.





# Appendix









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302-1	Energy consumption within the organization	62	Energy consumption absolute values in GJ are: electricity consumption 543,011 GJ; diesel fuel 491,805; liquefied petroleum gas (LPG) 48,772; petrol 6,673 GJ.
<b>GRI 305: Emissions 2016</b>			
305-1	Direct (Scope 1) GHG emissions	62-63	<p>a) Direct (Scope 1) GHG emissions are equivalent to 40,225 t CO<sub>2eq</sub>.</p> <p>b) Gases included in the definition of Greenhouse Gases are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, however CH<sub>4</sub> and N<sub>2</sub>O % is negligible compared to that of the CO<sub>2</sub>.</p> <p>d) The base year for calculation is 2019.</p> <p>e) The source of emissions factors is DEFRA 2019 (UK Government GHG Conversion Factors for Company Reporting).</p> <p>f) Data relating to JVs are reported as total JV values, without considering Ghella's percentage of participation in the JV.</p> <p>g) To classify emissions references are made to "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised edition)" which defines Scope 1 Direct GHG emissions: Direct GHG emissions occurring from sources that are owned or controlled by the company, such as emissions from combustion in plants, boilers, vehicles, etc. (e.g. diesel, petrol, LPG consumption etc).</p>





GRI STANDARDS	DESCRIPTION	PAGE	NOTES																												
305-2	Energy indirect (Scope 2) GHG emissions	62-63	<p>"a) Indirect (Scope 2) GHG emissions are equivalent to 63,569 t CO<sub>2eq</sub>.</p> <p>b) For the calculation of CO<sub>2</sub> emissions, the "Location-based" method has been applied, which uses average GHG emission factors specific to each national energy generation mix.</p> <p>c) Gases included in the definition of Greenhouse Gases are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, however CH<sub>4</sub> and N<sub>2</sub>O % is negligible compared to that of the CO<sub>2</sub>.</p> <p>d) The base year for calculation is 2019.</p> <p>e) The source of emissions are the following:</p> <table> <tr> <th>Year</th><th>Country</th><th>F.E.</th><th>Source:</th></tr> <tr> <td>2018</td><td>Australia</td><td>0.8000 kgCO<sub>2</sub>e/kWh</td><td>Australian Government 2018 Published in July 2018</td></tr> <tr> <td>2018</td><td>NZ</td><td>0.0074 kgCO<sub>2</sub>e/kWh</td><td>Ministry for the Environment</td></tr> <tr> <td>2017</td><td>UAE</td><td>0.4333 kgCO<sub>2</sub>e/kWh</td><td>Dubai Electricity &amp; Water Authority (sustainability report 2017)</td></tr> <tr> <td>2017</td><td>Argentina</td><td>0.3583 kgCO<sub>2</sub>e/kWh</td><td>Climate Transparency (2018 Report) - Emissions intensity of the power sector</td></tr> <tr> <td>2018</td><td>Italy</td><td>0.296 kgCO<sub>2</sub>e/kWh</td><td>National Inventory Report 2020</td></tr> <tr> <td>2018</td><td>Norway</td><td>0.011 kgCO<sub>2</sub>e/kWh</td><td>Association of Issuing Bodies (AIB) - Production mix factor</td></tr> </table> <p>f) Data relating to JVs are reported as total JV values, without considering Ghella's percentage of participation in the JV.</p> <p>g) To classify emissions references are made to "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised edition)" which defines: Scope 2 - Indirect GHG emissions (electricity): emissions generated by the production of the electricity consumed by the company; Scope 3 – Other indirect GHG emissions: all other GHG emissions associated to activities of the company, but not owned or controlled by the company (e.g. emissions due to activities of third parties operating within the Group worksites).</p>	Year	Country	F.E.	Source:	2018	Australia	0.8000 kgCO <sub>2</sub> e/kWh	Australian Government 2018 Published in July 2018	2018	NZ	0.0074 kgCO <sub>2</sub> e/kWh	Ministry for the Environment	2017	UAE	0.4333 kgCO <sub>2</sub> e/kWh	Dubai Electricity & Water Authority (sustainability report 2017)	2017	Argentina	0.3583 kgCO <sub>2</sub> e/kWh	Climate Transparency (2018 Report) - Emissions intensity of the power sector	2018	Italy	0.296 kgCO <sub>2</sub> e/kWh	National Inventory Report 2020	2018	Norway	0.011 kgCO <sub>2</sub> e/kWh	Association of Issuing Bodies (AIB) - Production mix factor
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GRI STANDARDS	DESCRIPTION	PAGE	NOTES
Resource protection			
GRI 103: Management approach disclosures 2016			
103-1	Explanation of the material topic and its Boundary	11; 26-27; 64; 74	
103-2	The management approach and its components	11;60-61; 64	
103-3	Evaluation of the management approach	60-61;64	
GRI 303: Water and Effluents 2018			
303-1	Interactions with water as a shared resource	64	
303-2	Management of water discharge-related impacts	64	
303-3	Water withdrawal	64	<p>b) In construction sites where groundwater withdrawal is used, we respect the limits imposed by local legislation on extraction limits aimed at avoiding water stress in the area.</p> <p>c) All supplied waters fall into the freshwater category (≤1,000 mg/l total solid content)</p>
GRI 301: Materials 2016			
301-1	Materials used by weight or volume	66	
GRI 304: Biodiversity 2016			
304-2	Significant impacts of activities, products, and services on biodiversity	68-69	
Anti-corruption			
GRI 103: Management Approach Disclosures 2016			
103-1	Explanation of the material topic and its Boundary	11; 26-27; 31; 74	
103-2	The management approach and its components	11; 31	
103-3	Evaluation of the management approach	31	
GRI 205: Anticorruption 2016			
205-3	Confirmed incidents of corruption and actions taken	31	During 2019 no incidents of corruption were reported and no legal cases were brought against Ghella or its representatives/ employees.







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(Translation from the Italian original which remains the definitive version)

## Independent auditors' report on the sustainability report

To the board of directors of  
Ghella S.p.A.

We have been engaged to perform a limited assurance engagement on the 2019 sustainability report (the "sustainability report") of the Ghella Group (the "group").

### *Directors' responsibility for the sustainability report*

The directors of Ghella S.p.A. (the "parent") are responsible for the preparation of a sustainability report in accordance with the "Global Reporting Initiative Sustainability Reporting Standards" issued by GRI - Global Reporting Initiative (the "GRI Standards"), as described in the "Non-financial reporting methodology" section of the sustainability report.

The directors are also responsible for such internal control as they determine is necessary to enable the preparation of a sustainability report that is free from material misstatement, whether due to fraud or error.

They are also responsible for defining the group's objectives regarding its sustainability performance and the identification of the stakeholders and the significant aspects to report.

### *Auditors' independence and quality control*

We are independent in compliance with the independence and all other ethical requirements of the Code of Ethics for Professional Accountants (including the International Ethics Standards) (the IESBA Code), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our company applies International Standard on Quality Control 1 (ISQC Italia 1) and, accordingly, maintains a system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG S.p.A. è una società per azioni di diritto italiano e fa parte del network KPMG di entità indipendenti affiliate a KPMG International Cooperative ("KPMG International"), entità di diritto svizzero.

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Padova Palermo Parma Perugia  
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Notes

- 1 Sydney Metro CSW Business Case Summary
- 2 PORTER M. E., KRAMER M. R., Creating Shared Value, in “Harvard Business Review”, gennaio/febbraio 2011, pp.64-77
- 3 In 2019 the Business Roundtable, an association representing the CEOs of some of the most important companies in the U.S.A., issued a new "Corporate Purpose Statement" signed by 181 CEOs committed to leading their businesses for the benefit of all stakeholders. For more than 20 years, the association had explicitly given priority to shareholders.
- 4 Rating systems for the construction sector, such as the Envision, CEEQUAL and IS Rating Scheme (IS) protocols; SASB matrix for the "Engineering and Construction Services" sector
- 5 UN - International Charter of Human Rights (Universal Declaration of Human Rights; International Convention on Civil and Political Rights; International Convention on Economic, Social and Cultural Rights); ILO - Conventions of the International Labour Organisation; UN - Convention on the Rights of Children and Adolescents; European Convention for the Protection of Human Rights; ILO - Declaration on Fundamental Principles and Rights at Work; UNICEF - Children's Rights and Business Principles.
- 6 The frequency index (LTIFR) expresses the average frequency of injuries lasting more than three days as required by Eurostat and is calculated according to the UNI 7249 standard considering the ratio between the number of injuries and the total hours worked, multiplied by 1,000,000
- 7 The severity index (LTISR) makes it possible to identify the average severity of accidents lasting more than three days as required by Eurostat and is calculated according to the UNI 7249 standard considering the ratio between the number of days of absence from work and the total hours worked, multiplied by 1,000.
- 8 The total frequency index (TRIFR) takes into account all the accidents that have occurred (recordable accidents at work: accidents at work - lost-time injury "LTI"; injuries with medication only - medical treatment case "MTC"; injury which did not generate an absence from work - restricted work case "RWC"; death). The index is calculated considering the ratio between the number of recordable occupational injuries and the total hours worked, multiplied by 1,000,000.
- 9 Tunnel of Saint Martin la Porte Grenoble, Tunnel AP 209 Mules 2-3 BBT, Motorway A14 Lot 5, Motorway A3 Macrolotto 3 - part II, Tunnel Pavoncelli Bis, Arenal Hydroelectric Lot C2 phase I and II, Line 3 Athens Metro, Central Interceptor , NA-BA Railway Section Cancelli-Frasso Telesino, Cross River Rail, Follo Line Railway Tunnel, Legacy Way, Los Negros II Hydroelectric, Riachuelo Lotto 1, Sarmiento, Metro Hanoi, Dewa III, Sydney Metro.
- 10 The reported rate was calculated considering the ratio between the number of high-consequence injuries and the total hours worked, multiplied by 1,000,000
- 11 Work related injuries - lost-time injury "LTI"
- 12 Medical treatment case "MTC"
- 13 Restricted work case "RWC"
- 14 The data refers to the reporting scope, defined in the Methodological Note
- 15 The reporting scope is defined in the Methodological Note
- 16 The item "use of funds" was subtracted from the total revenues reported in the income statement and the item "financial income from re-expression" was subtracted from the financial income figure.
- 17 The reporting scope is defined in the Methodological Note
- 18 Elements of an organization's activities, products or services that interact or may interact with the environment
- 19 The reporting scope is defined in the Methodological Note
- 20 The CO2 emission factors for the production of electricity in the countries where our sites are located are described in the Methodological Note
- 21 Photo by AhmedAlAwadhi7, [https://commons.wikimedia.org/wiki/File:Sand\\_Gazelle\\_2.jpg](https://commons.wikimedia.org/wiki/File:Sand_Gazelle_2.jpg)







Copertina: Norvegia, Oslo  
Tipica roccia basaltica sul fiordo della città di Oslo  
Foto di Fabio Barile del progetto fotografico "Di roccia, fuochi e avventure sotterranee"