

Highlights 2021



Definition of company quantitative **targets** for **2030**



95

GWh produced by photovoltaic plants



67,13

tCO_{2eq} / Mio EUR revenue

baseline for carbon target
(scope 1 and 2)



632

Mio EUR

Economic value generated and distributed



1.481

m³ acqua / Mio EUR revenue

baseline for water target



93%

of order backlog are
Taxonomy-eligible projects



5,48

LTIFR

baseline for Health and Safety target



97%

of supplier spend is **allocated** to **local suppliers**



16,7%

women in managerial roles

baseline for Social aspects target



98%

of waste materials
recycled/reused/recovered

Letter to stakeholders

2021 proved to be a critical year for sustainability. The **global pandemic** continued to represent a great challenge for people's health and prosperity. The instability linked to the **European conflict** begun in the early months of this year exacerbated the existing **economic crisis**, impacting on the availability of raw materials and energy and increasing the costs of supply. **Climate change** continues to progress with increasingly more frequent extreme weather events.

In this context, using **resources efficiently** and **reducing the impacts** associated to production activities become an unavoidable necessity.

93% of the projects in our **order backlog** is eligible for the **European Taxonomy**, which means that they are potentially able to help mitigate and adapt to climate change, with **67%** of the backlog dedicated to **mobility** projects intended to significantly reduce greenhouse gas emissions and **17%** to projects that will improve access to **water infrastructures**. We produce electricity from photovoltaic plants, contributing to the transition to a **low carbon society**.

As the contracting company of these works, we are aware of the importance of contributing actively to the **ecological transition** and increasingly consolidating our **social responsibility**. In 2021, we revised our corporate **sustainability strategy** by setting **quantitative targets for 2030** in the main areas of environmental and social sustainability and strengthening the **governance** required to achieve them.

In 2021, the **economic value generated** directly by our activities, i.e. the overall wealth created for the stakeholders, is **686.38 million euros**, **92%** of which was **distributed** to personnel, financiers, suppliers and public administration.

We recorded a **30% decrease** in **greenhouse gas emissions** associated with energy consumption, in comparison to 2019, and we have **re-used or recycled 98% of our waste**.

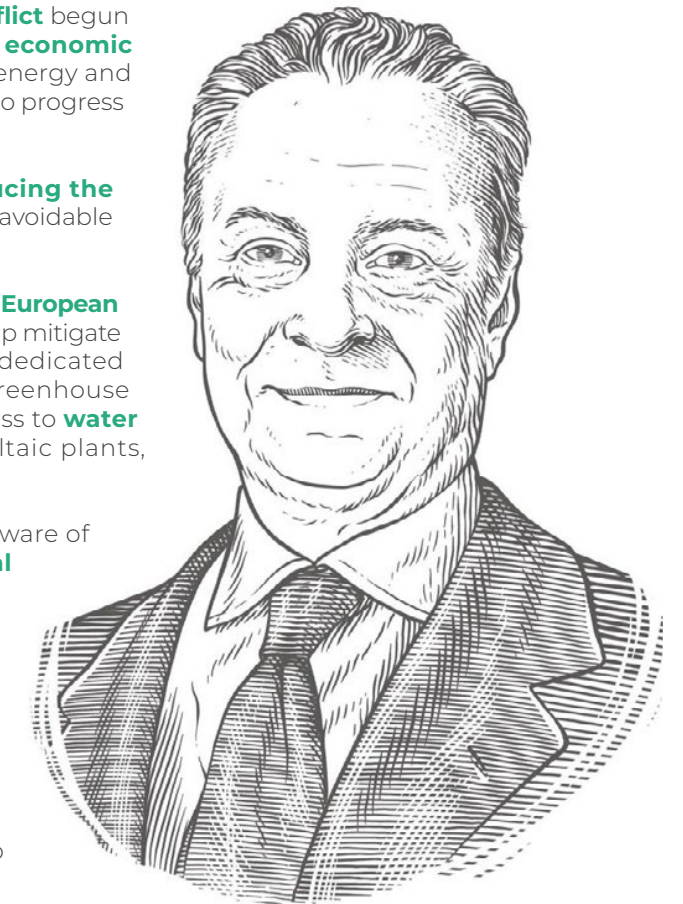
The **health** and **safety** of our workers remain the indisputable priority, also in response to the ongoing pandemic. In 2021, we renewed our commitment to investing in a shared **worksite safety culture** through awareness raising activities, training and continuous monitoring of performance.

In 2021, we contributed to value creation in the areas where we operate, with **96%** of the **personnel being hired locally** and **97%** of supply **costs** allocated to **local suppliers**.

Ghella proved yet again to be a **trusted partner** for **financial institutions** who in turn commit to sustainability programmes by operating a strict selection when granting access to credit. Thanks to this, by December 2021 Ghella had obtained two **green loans** for a total of 70 million euros.

This Sustainability Report is therefore the **starting point** from which to measure progress against our set targets, and so align our ambitions with the expectations of **stakeholders**, in an ongoing, virtuous process of improvement.

In the past Sustainability Report we talked about paving the road: now we need to travel it together.



Enrico Ghella
Chairman and CEO





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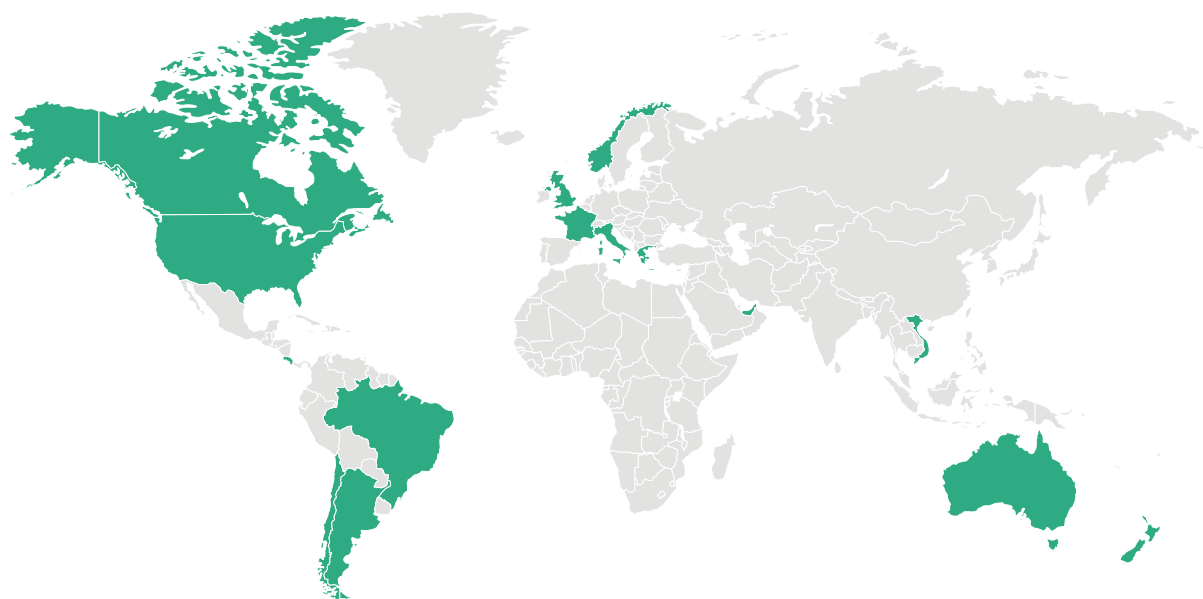
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ROADS AND MOTORWAYS

RAILWAYS AND METRO

WATER



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Railways



For us, work safety and respect for the environment are fundamental. We aid economic growth and social development in the areas where we work.

237 km with TBM*

237 km using conventional methods

15 km using pipe jacking

* As a restatement of the figure stated last year, 240 km, it should be noted that about 220 km had been excavated with TBMs as of 2020.

PHOTOVOLTAIC



Production data as of December 2021

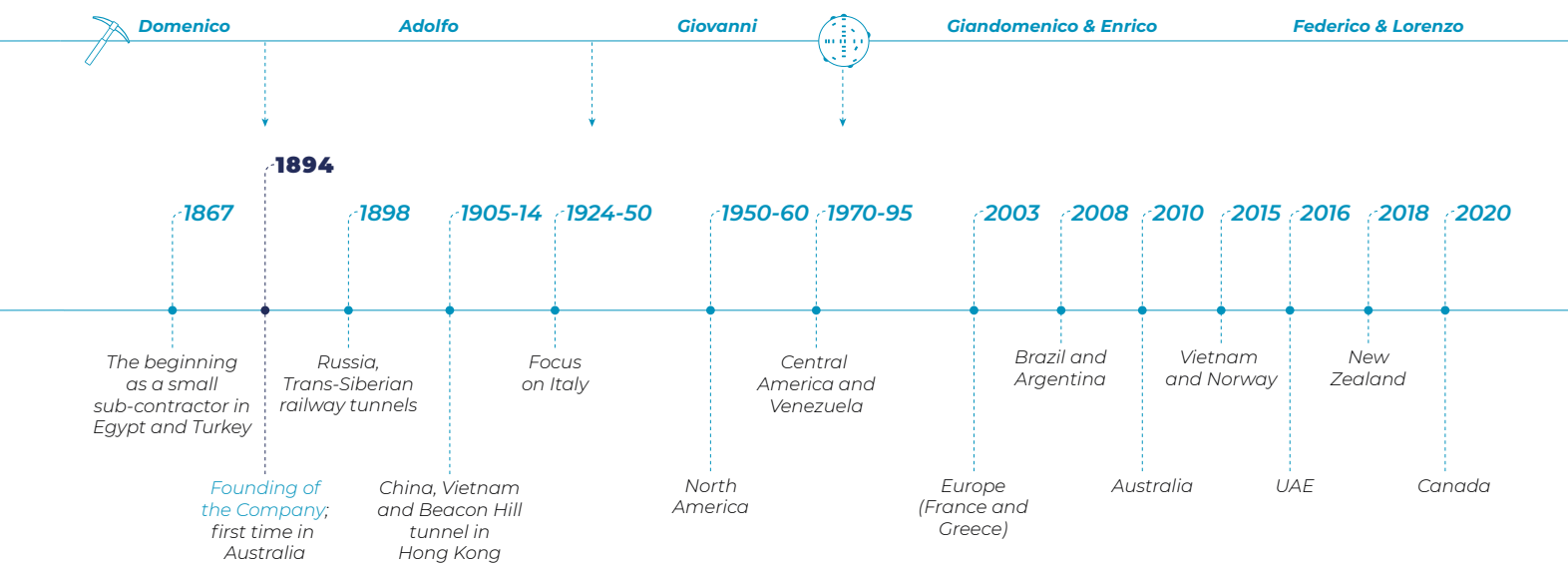
* The 11 hydroelectric plants are included in the total of Hydraulic Works





Italy
Ortona's gallery

History and Tradition



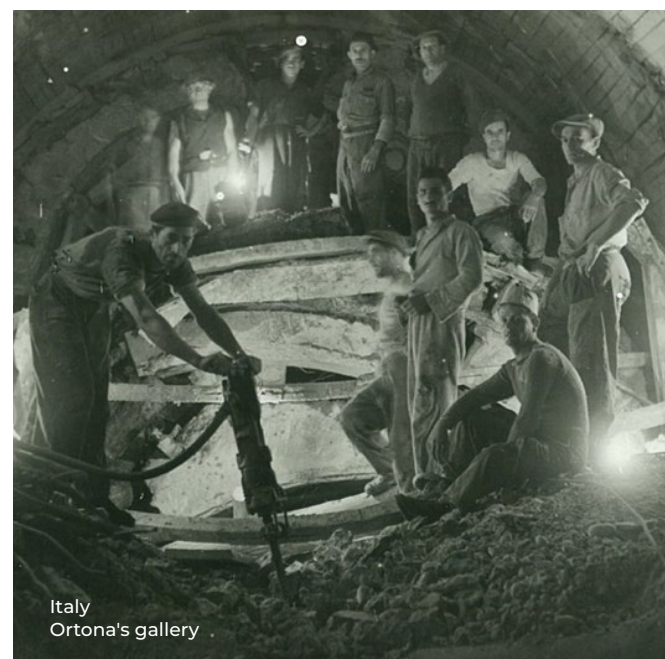
From the time it was founded, more than 125 years ago, Ghella has witnessed modern history through 5 generations. They have succeeded in transferring knowledge and expertise, technical ingenuity and curiosity. Every generation has left the mark of its present, overcoming difficult challenges.

The company was founded in **1894**, but the forefather of the family, **Domenico Ghella**, was already active on a worksite in **1867**.

RELATED LINK



Ghella.com
History



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Vision, Mission and Values

VISION Leave a better world to the next generations

MISSION Build excellence in a sustainable and innovative way

Our sustainability journey starts with our **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 achieving this vision is only possible through the collaboration of multiple players: governments, organisations,

companies and civil society. This is why we base our daily activities on our corporate **mission**, aimed at preserving and continuing our history as "constructors of **excellence**" pursuing **innovation** and **sustainability**, and on a clear set of **values** that guide the behaviour of us all.

Our Vision and Mission both encompass Sustainability because our intention is to **integrate** its principles in all facets of the business: from **selecting** targeted projects to work on, to the way we **carry out** our works, in strategic and management processes as well as in site operations.

Creation of shared value

As a company executing works, we focus on the **quality** of their development, 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 essential resources, such as personnel, raw materials or suppliers contribute to the creation of **shared value** for the company and 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, as well as the training of personnel and the positive impacts that we can indirectly generate for 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.

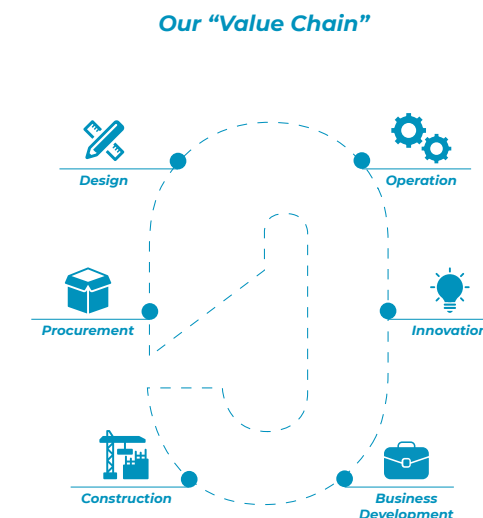
WHAT WE DEPEND ON

What We Depend On

- Motivated staff
- Raw materials and Energy
- Lenders
- Suppliers and sub-contractors
- Clients
- Partners

Creation of shared value

OUR "VALUE CHAIN"



THE VALUE WE CREATE

Value We Create

- Lasting and sustainable assets
- Sustainable mobility
- Renewable energies
- Skills and technology transfer
- Benefit for local communities
- Income creation



Stakeholder engagement and the materiality matrix

The selection of topics to be disclosed in our sustainability reports is the result of a **consultation** process, conducted in 2019, to understand how our corporate strategy, in terms of sustainability, responds to the **priorities** of key **stakeholders** and to take any potential corrective actions. In line with the AA1000 Stakeholder Engagement Standard, we **mapped** the key players who engage with our activities, selecting them on the basis of their ability to affect Ghella's objectives and results, or be affected by them.

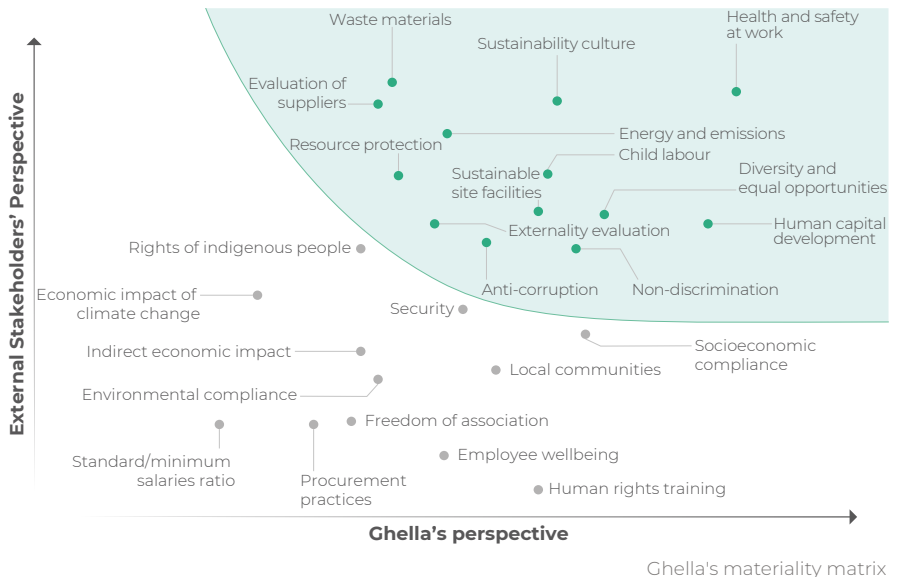


A representative sample of the different types of internal and external stakeholders was the receiver of a survey intended to define, based on a selection of 29 proposals, a set of material topics, i.e. topics deemed particularly important for a 3-year period according to the opinion of the interviewees.

We thus obtained our first **materiality matrix**, where the material themes reflect the major economic, environmental and social impacts for Ghella, and substantially affect the assessments and decisions of stakeholders.

The material themes are the main aspects that we focused our efforts on, by giving them relevance in our Sustainability Plan and setting for them 2030 quantitative objectives.

"Occupational health and safety" was the most material topic before the Covid-19 pandemic and continues to be an absolute priority for us in all aspects of our business.



Ghella's materiality matrix

Our objectives

With a view to stimulating the **continuous improvement** of our performance, we have defined a **sustainability strategy** with a 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.



The United Nations have approved the [Global Agenda for Sustainable Development](#) in 2015 and the related (Sustainable Development Goals - SDGs)

Our **"Building a better World' Sustainability Plan** for the 2019-2022 period provides a single 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 represents our systematic approach to the integration of sustainability objectives into business processes by increasing the sense of shared responsibility and motivation of the production departments involved. Since it is shared externally, it communicates the company's strategic direction to our stakeholders, increasing our

competitive edge in national and international calls for tenders. The sustainability plan translates our corporate vision into specific social, economic and environmental **commitments** to our people (in terms of their safety and well-being) and our communities. Our focus on value creation is expressed through our commitment to quality, innovation and local economic growth, while with respect to the environment, we consider the impacts of our works, generated both locally and at global level, such as direct and indirect GHG emissions.



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»

Our commitments in the **3 spheres** - **social, economic and environmental** – were in turn translated into **actions** aimed at achieving **8 macro-objectives**. The topics embraced in the objectives were defined through the analysis and integration of internationally recognised standards, such as ISO 26000 "Guide to social responsibility" and the SDGs, and reflect the values and guidelines expressed in company policies while being aligned with our stakeholders' expectations.

In 2021, Ghella began a corporate sustainability strategy consolidation process by setting **quantitative targets for 2030** in the main areas of environmental and social sustainability and strengthening the governance required to achieve them.



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»

The new targets are the result of an **internal workshop** carried out in November 2021 with the support of a top strategic consultancy company which involved 55 participants including members of the Board of Directors and employees from 4 Continents, for more than 12 hours of consultation and discussion on the themes of corporate sustainability. Defining quantitative targets represents the company's commitment to actively contribute to the ecological transition and strengthening the company's social responsibility. The aim is to initiate a virtuous cycle of **precise and concrete actions** in every operational area to generate continuous improvement of the sustainability performance and to strengthen our role as the trusted partner of internal and external stakeholders.



ENVIRONMENT

«Strive to integrate our built projects in the existing **Local Ecosystem** and to be active participants in the global effort to mitigate **Climate Change**»



OBJECTIVES

- 

1. Consolidate a compliance and sustainability **Governance** at 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 Impact**
- 


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

ENVIRONMENTAL TARGETS

- 

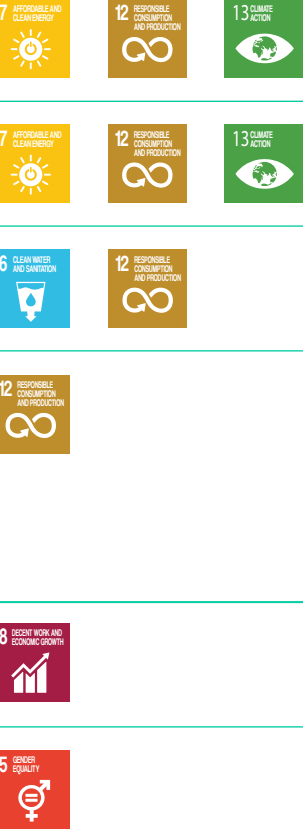
Become **Carbon Neutral** by 2050
- 

Reduce* Scope **1 and 2² CO_{2eq} emissions by 25%** (expressed in tCO_{2eq}/Mio EUR) revenue by 2030
- 


Reduce* **water withdrawals by 15%**, (expressed in m3/Mio EUR) revenue by 2030
- 


Maximise the use of **recycled materials** and the **reuse of excavated earth**

SDGS



SOCIAL TARGETS

- 

Pursue **Zero Harm** in our workplaces
- 

Have **30%** of **management roles** globally held by **women** by 2030

* Baseline year: 2021

External performance assessment

We have taken on the challenge to increasingly integrate sustainability into our business processes and our commitment was recognised in 2021 by international rating systems applied at corporate level.

We have maintained the Platinum rating level of the EcoVadis platform, the global independent rating supplier for Corporate Social Responsibility (CSR) which rates us among the top 1% of the most competitive companies assessed. Ecovadis assesses suppliers operating in 160 countries and 190 purchasing categories based on 21 CSR criteria, grouped into 4 main themes (environment, labour and human rights, ethics and sustainable procurement) 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 assessment are used by over 65,000 companies.

The Ecovadis rating is used as one of the covenants to monitor Ghella's sustainability performance for the purposes of "green" loans, such as that obtained from BNL Gruppo BNP Paribas in 2020 with SACE guarantee.

In 2019, we obtained the highest score (100/100) in the external audit performed by Achilles, a global platform that certifies supplier performances and risk levels. We confirmed this score during the updates conducted in 2021 and 2022. The Achilles certification covers 18 sustainability topics across the following 4 areas: Occupational Health and safety, Environment, Quality and Corporate Social Responsibility (CSR).



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Governance

"I am happy to work in an environment where the key corporate value is to maintain a high professional, ethical and moral standard in everything we do and to operate for the common good and for the group as a whole."

Marco Tummarello

CFO

Corporate Structure

Ghella S.p.A. (hereinafter also Ghella) is an unlisted company limited by shares whose indirect owners are Ghella Group S.r.l. by 70% and Geo 2007 S.r.l. by 30%.

While remaining a family-run business, Ghella's governance model has developed over time in tune with

its sustained expansion into new international markets. Ghella S.p.A.'s corporate structure consists of a Board of Directors (BoD) and a Board of Statutory Auditors, both appointed by the shareholders, independent auditors and a supervisory body as per Legislative decree no. 231/01, appointed by the Board of Directors.

BOARD OF DIRECTORS

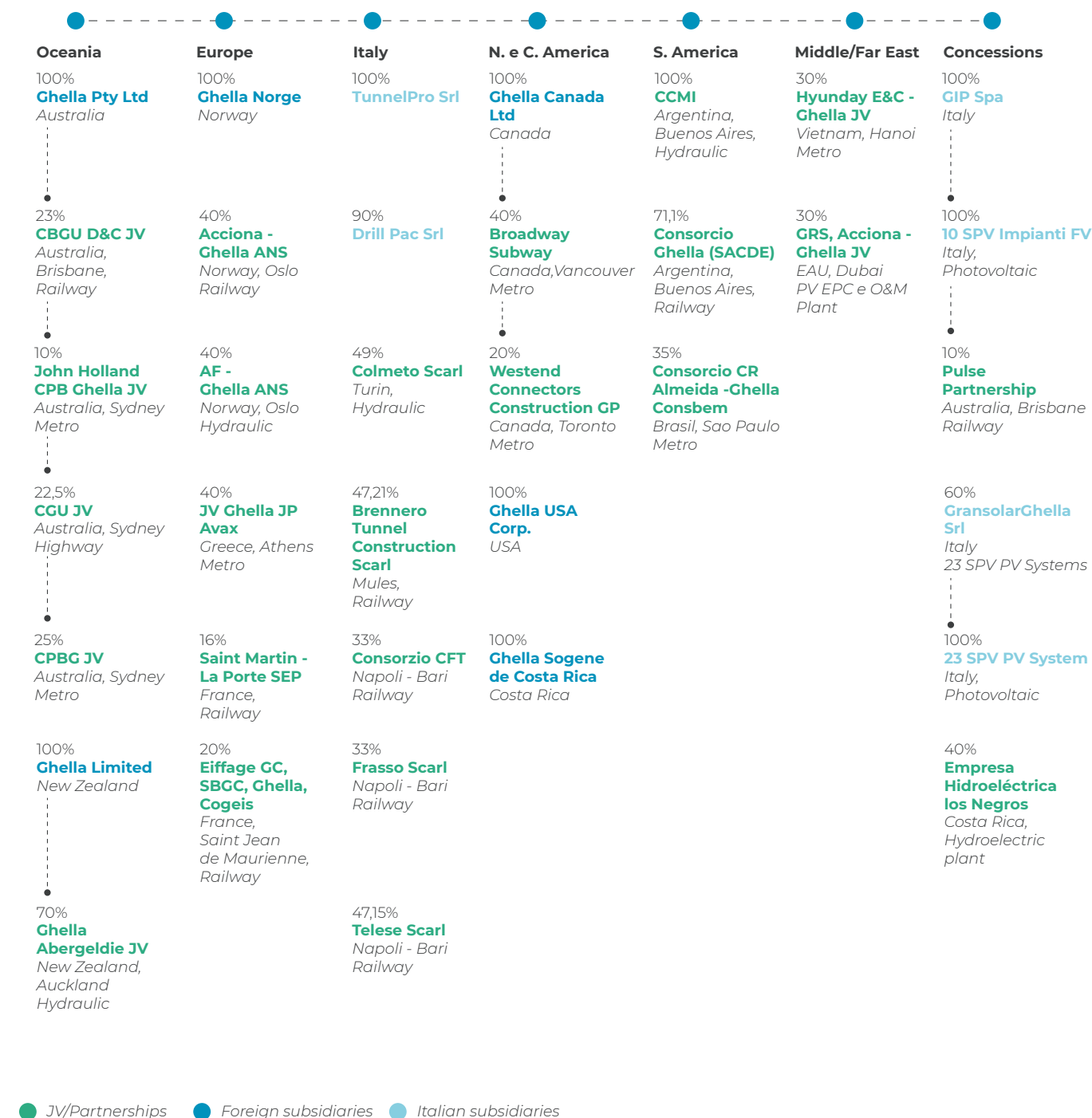
Enrico Ghella	Chairman and CEO
Federico Ghella	Deputy Chairman
Lorenzo Ghella	Deputy Chairman
Giulio Grimaldi	Director
Alberto Nigro	Director
Marco Tummarello	Director

BOARD OF STATUTORY AUDITORS

Riccardo Gabrielli	Chairman
Alberto Santi	Auditor
Francesco Farina	Auditor



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Corporate structure



The **BoD** at Ghella S.p.A. is composed of six directors, four of whom are also shareholders. By its resolution of 30 May 2022, the BoD has appointed to the Chairman and executive officer all-encompassing powers for the ordinary and extraordinary administration of the company as well as the same powers to the two Deputy Chairmen in case of Chairman's absence and/or impediment. It has also assigned financial powers to the CFO and Director Dr. Tummarello. The Board of Directors is also in charge of providing guidance regarding the Code of Ethics, policies and guidelines.

At the beginning of 2022 the Board of Directors set up an **ESG Committee** as the board of statutory auditors at Ghella S.p.A. with the aim of defining Ghella's ESG strategy, identifying the priorities, the commitments and objectives, in keeping with company's business needs, and monitoring the progress of the activities and targets. The Committee has also the task of

identifying the ESG Representatives, at the corporate and country area level, assigning responsibilities and objectives in relation to the implementation of the strategy, and defining actions, initiatives and projects to achieve the company's ESG targets. The Committee is composed of ten members including shareholders and company management, representing specific business areas or competence, five of whom also hold executive roles.

The BoD approves the Sustainability Plan, the materiality analysis and the annual Sustainability Report, presented by the ESG Committee.

The **Board of Statutory Auditors** is the internal control body that supervises compliance with the principles of correct administration, as required by Ghella's articles of association. It has three standing members and two alternate members, appointed and effective

pursuant to the Italian Civil Code.

As required by the regulations in force, the statutory audit is performed by an independent **Audit Company** included in the special register, appointed by the Board of Directors. In implementation of Legislative decree no. 231/01, Ghella's Board of Directors has also set up a **Supervisory Body** comprising three independent members who have a three-year term.

The **Compliance & Sustainability** department reports to the **Corporate Strategy Manager** (who is a member of the BoD) and is tasked with coordinating the sustainability activities integrated into the various internal processes, supporting the ESG Committee in identifying areas for improvement, producing the annual sustainability report and guaranteeing alignment with international best practices.

Responsible business conduct

We have adopted a system of principles, policies and management and control tools to ensure the responsible management of every

phase of our business. The practices and policies, developed from a clear vision of how we intend to create value, are the foundations of the

Integrated Management System, which allows us to coherently and uniformly manage our activities.

CODE OF ETHICS

The **Code of Ethics** expresses the ethical and conduct principles that represent us and that all those who work to achieve the company's objectives are required to comply with. Directors must take the principles and values contained in the Code into account while setting the business objectives.

The New Code of Ethics, issued in 2020 in an updated version to reflect the Company's international expansion, can be consulted on our

website ghella.com. It applies globally to Ghella S.p.A. and its subsidiary and participated companies. It is binding for all directors, executives and employees in any country and in any way that they offer their services. The Code is also intended for any third party that collaborates or works in the name of, on behalf of or in the interest of the Company.

All employees periodically take a multilingual **training** programme on its content in e-learning mode.

POLICIES

We have implemented the following policies:

- Quality Policy;
- Health and Safety Policy;
- Environmental Policy;
- Sustainability Policy;
- Sustainable Procurement Policy;
- Human Resources management policy;
- Appropriate workplace behaviour Policy;
- Equality, diversity and inclusion (EDI) Policy;
- Whistleblowing policy;
- Policy for Social Responsibility - SA8000.

All of our policies are signed by the Chairman and CEO, shared within the employee induction process and made available on the intranet portal and on our website ghella.com. They are revised annually over the course of the Management System Review to ensure coherence with the company's Mission and Vision.

ORGANISATIONAL AND MANAGEMENT MODEL PURSUANT TO LEGISLATIVE DECREE NO. 231/01

Ghella S.p.A. has an **Organisational, Management and Control Model** aimed at preventing the risk that the predicate crimes pursuant to Lgs.D. 231/01 could be committed. The latter provides for the administrative responsibility of companies for criminal offences committed in pursuing their interests, punishable with fines and bans. These crimes include corruption, environmental and occupational safety crimes, crimes against industry and trade and anti-competitive practices, crimes against the individual (human rights and work practices), crimes of terrorism

financing and transnational crimes. In 2021, the Board of Directors adopted the updated version of the Model pursuant to Lgs. D. 231/2001 as amended.

The Supervisory Body, which is an independent control body, supervises the working of, and compliance with the model and makes proposals for its updating. It also promotes suitable communication and training initiatives aimed at raising awareness of the model with all employees.



Canada, Vancouver
BroadwaySubway, Millenium Ext.



MANAGEMENT SYSTEM

Given our footprint in many culturally different countries, we have a multi-site **Integrated Management System** for Quality, the Environment and Occupational Health and Safety as part of our organisational model. This system reflects Ghella's standardised organisational and operational approach while giving the individual local units the organisational independence necessary to comply with local legislation and clients' requirements.

Company principles and guidelines are shared with internal and external stakeholders through our website while procedures are shared internally with each worksite 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 ensure our management and oversight of internal processes in line with the Quality, Health and Safety, and Environment frameworks and their ongoing improvement.

The system applies to all of Ghella's activities carried out at our worksites. In the case of contracts where we operate as part of a Joint Venture, the worksite's management system is designed ad hoc considering each partner's management system. In this case, Ghella participates in the design of the shared system to ensure that our principles and rules are fully integrated in the joint venture's system.

In 2021, we started the process to certify our Management System according to the SA8000 standard. This was successfully completed in February 2022 when we obtained the "Social accountability certification".

third parties to assess their integrity and reputation. The Compliance & Sustainability department provides specialist support to ensure the implementation of the anti-corruption guidelines which can be found on our website ghella.com. The guidelines are also adopted by subsidiary and participated companies and all employees periodically take a multilingual e-learning training programme on their content.

HUMAN RIGHTS

Dignity and **respect for people** are pillars of our corporate culture: we are committed to operating in accordance with international best practices in all our activities around the world, in order to prevent any **human rights violations**. This requires not only a code of 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.

The Human Rights Guidelines provide our internal and external stakeholders with a tool to identify and prevent potential Human Rights violations. Below are our main reference frameworks:

- the UN Universal Declaration of Human Rights;
- the eight Fundamental Conventions of the International Labour Organisation (ILO);
- the UN Convention on the Rights of the Child;
- European convention on Human Rights;
- the ILO Declaration on Fundamental Principles and Rights at Work;
- Children's Rights and Business Principles of UNICEF.

We also take into consideration non-binding principles such as:

- UN Global Compact Principles "A Guide for Businesses: how to develop a Human Rights Policy";
- OECD guidelines for Multinational Enterprises;
- Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework;

- ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy.

We forbid every form of child labour, nor do we tolerate any work that, by its nature or the circumstances that it is conducted in, could harm the health, safety or morals of minors. We declare our commitment in the following policies:

- Policy for Social Responsibility - SA8000;
- Guideline on Human Rights;
- Sustainable Procurement Policy.

We ask that our partners and suppliers embrace the same principles and we have defined and actuated specific procedures concerning the management of human resources and qualification and assessment of suppliers, commensurate to the risk pertaining to child labour.

Since 2020, our **Australian subsidiary Ghella Pty Ltd** needs to fulfil the requirements of the Modern Slavery Act 2018 (Cth) (Commonwealth Act). In particular, Ghella Pty Ltd has prepared and published a **Modern Slavery Statement** for the years 2020 and 2021 describing the risks in relation to the occurrence of episodes of modern slavery in production activities and in the supply chain, and the measures taken to mitigate them. Modern Slavery Statements are publicly accessible at www.modernslaveryregister.gov.au.

ANTI-CORRUPTION

To cope with the potential risks that corruption may have on the group's business, Ghella S.p.A. and its subsidiaries adopted anti-corruption guidelines containing a system of rules and checks to be applied in their relations with stakeholders. These guidelines set out the measures to be taken, in compliance with the principles expressed by Transparency International and with the main international standards and best practices, and the checks to be carried out, including the performance of due diligences on



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WHISTLEBLOWING

Ghella S.p.A., its subsidiary and participated companies have adopted a **whistleblowing** policy that establishes the methods for making confidential reports about violations or suspected violations of the code of ethics, policies, company guidelines, crimes envisaged by the Model 231 or other irregularities in the application of internal procedures, using channels made available to employees and external stakeholders. A guided IT portal was set up as the preferred conduit to submit reports, guaranteeing the confidentiality of the whistleblower's identity.

In 2021, we held a multilingual e-learning training course on the content of the policy and the use of the IT portal. As described in our Social Responsibility policy, reports on relevant themes can also be sent to the Social Performance Team. It is also possible to contact the Certification Body for the SA8000 System or, alternatively, the Accreditation Body for the SA8000 standard.

RISK MANAGEMENT

Downstream of the analysis of the context, in a view of risk-based thinking, we pinpoint and periodically update the main risks and opportunities, at our work sites and offices, linked to factors identified as the most relevant for achieving company objectives and the satisfaction of stakeholder expectations.

The selection of the possible threats is followed by the definition of structured actions aimed at mitigating the probability of occurrence or the impact that the

event would have on the organisation or on the external context once it has occurred. In the same way, we identify actions that make it possible to seize opportunities.

On an operational level, we conduct an annual analysis and six-monthly monitoring of the exposure to risks and track progress on the mitigation actions, in conjunction with Corporate department managers and the Risk Managers at site level. The results of these analyses are presented to the Board of Directors.



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Projects

“Operating sustainably means making an active contribution to the development of an area’s economic wellbeing and a community’s growth”

Luca Paioletti

Country Manager Norway

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

Our projects, mainly in the railway, subway and hydraulic works sectors, are designed to bestow a lasting legacy on the residents of the cities and areas in which we work, facilitating their transition to increasingly sustainable lifestyles.

From the analysis of the entire order backlog, based on the Taxonomy indications, we have found that 93% of our activities are eligible for the European classification,

meaning that they are potentially able to help mitigation and adaptation to climate change. Specifically, of the economic activities mentioned in Annex I of the Delegated Regulation (EU) 2021/2139, our projects are allocated in the following areas:

4. Energy

4.1 Electricity generation using solar photovoltaic technology;

5. Water supply, sewerage, waste management and remediation activities

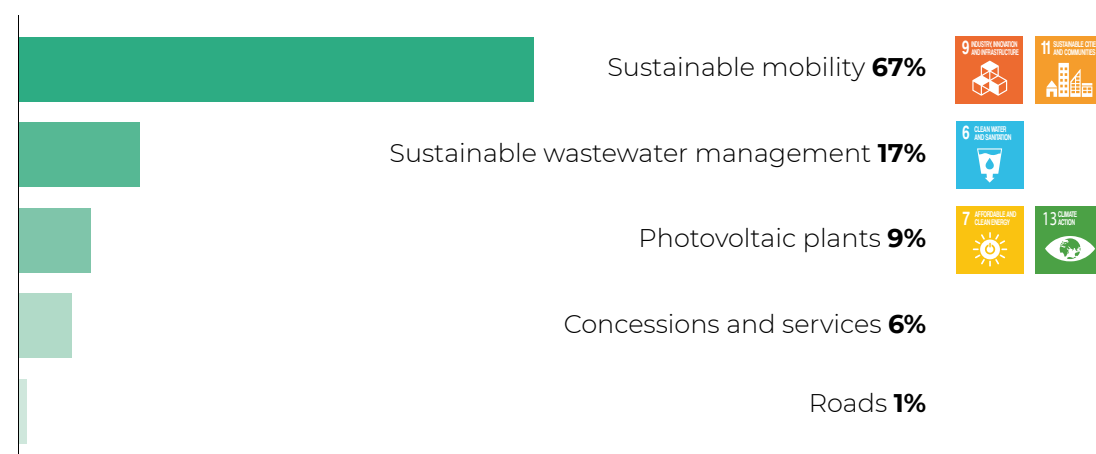
5.3 Construction, extension and

operation of waste water collection and treatment;

6. Transport

6.14 Infrastructure for rail transport;

6.15 Infrastructure enabling road transport and public transport.



Order backlog by activity: we proceeded with the following classification, on the basis of annex I of the delegated Regulation (EU) 2021/2139: “Sustainable mobility” covers activities 6.14 and 6.15 of the transport sector; “Sustainable wastewater management” covers activity 5.3 of the “Supply of water, wastewater networks, waste treatment and decontamination” section; “Photovoltaic” covers activity 4.1 of the energy sector

The infrastructural projects that we are working on are particularly important with regard to the economic recovery following the pandemic and our country’s commitments made with the European Union within the Next Generation EU. In particular, the Italian National Recovery and Resilience Plan (NRRP) includes “Infrastructure for sustainable mobility” within its six missions. This implies that, at the heart of Italy’s plan to kick-start its economic relaunch, is the construction

industry, Ghella’s core business, and that sustainability, already an integral part of its operations, is even more indispensable.

The current European geopolitical scenario and its repercussions on a global level pose further attention on the need to use raw materials and energy resources more efficiently, in this way contributing to the acceleration of the sustainable transition in the world of infrastructures.



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Project sustainability benefits

Italy

BRENNERO BASE TUNNEL

- **55 minutes** reduction in journey times
- Annual reduction of approximately **200,000 tCO_{2eq}**

NAPLES - BARI

- Reduction of the travel time between Naples and Bari of **1 hour and 40 minutes**
- First **Platinum Envision** certification in Europe obtained for the design of our project for our customer RFI

TURIN MEDIAN COLLECTOR

- Lower concentration of pollutants in the waste water of **80 municipalities**

Norway

FOLLO LINE

- **Halving of the travel time** between Oslo and Ski

CLEAN WATER TUNNEL

- Reduction in network loss of more than 10 percentage points

France

TURIN - LYON

- Annual reduction of approximately **3 million tCO_{2eq}**

Greece

ATHENS METRO

- **132,000 passengers** served per day
- **45 minutes** travel time between the Athens airport and the Piraeus Harbour
- Average reduction of **23,000 vehicles** per day
- Daily reduction of approximately **120 tCO_{2eq}**

Australia

CROSS RIVER RAIL

- Peak of **24 trains** per hour in both directions
- **9,000** more passengers per day by **2026** and **23,000** by **2036**

SYDNEY METRO - WESTERN SYDNEY AIRPORT

- Peak of **12 trains** per hour in both directions
- **100,000 less cars** by 2026

M6 SYDNEY

- Reduction of trucks on surface roads by **2,000 trucks per day**

SYDNEY METRO CITY AND SOUTHWEST

- **71%** increase in the number of morning peak hour trips
- Travel modal shift from car to subway of **20,000 trips** during rush hour by 2036

Canada

BROADWAY SUBWAY PROJECT

- **163,000 forecast daily passengers** in 2030
- Reduce the daily commute time by ~ **30 minutes**

EGLINTON

- **37,000 thousand passengers** per day
- Annual reduction of approximately **39,000 tCO_{2eq}**

Argentina

MATANZA RIACHUELO

- **7 million local residents** (of which 10% below the national poverty line) beneficiaries of the infrastructure

UAE

DEWA PHASE III

- **1,066 MW** power plant

Vietnam

PILOT LIGHT LINE 3 - METRO HANOI

- **200,000 passengers** per day

New Zealand

CENTRAL INTERCEPTOR

- **80% reduction** in Auckland's **wastewater** overflows due to stormwater



SUSTAINABLE MOBILITY RAILWAYS

Our railway works facilitate the transition from **road to rail**. We work on strategic national and international transport corridors, improving the **mobility** of people and goods and making positive contributions to the reduction of atmospheric emissions and fossil fuel consumption associated with transport.

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

The 22-km double-track **Follo Line** will halve the travel time between Oslo and the satellite city Ski and develop the existing railway transport system, making it more competitive in terms of journey times and travel quality and therefore reducing city traffic due to commuting. The benefits of this project extend to the urban planning sphere and 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.

At the end of 2021, the Follo Line project was roughly 97% completed.

Once finished, with its 55-km track 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 the road transport mainly 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 with increased freight load capacity, which will require less power and energy. Our client BBT has estimated the reduction in CO_{2eq} emissions associated with the new transport option offered by the construction of the tunnel. It analysed traffic scenarios and produced an estimate of the amount of CO_{2eq} associated with the construction phase, therefore considering the so-called “zero project hypothesis”³. A time of about 14 years has been estimated to offset the CO_{2eq} emissions associated with the construction of the Base Tunnel,

with a subsequent tCO_{2eq} saving of about 200,000 tonnes every year of the infrastructure's life cycle.

Work on the Brenner Base Tunnel commenced as contractually provided for in September 2016 and is slated to take around 7 years overall. At the end of 2021, the contract was approximately 70% completed.

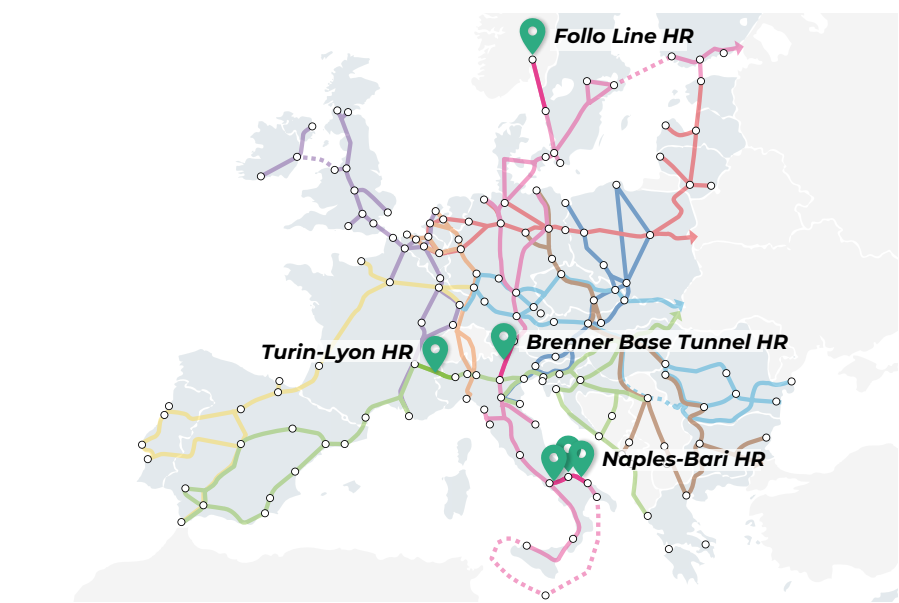
We are involved in three lots of the **high speed/high capacity Naples-Bari railway line**, which has been identified as a priority in the list of structural investments set out in the “Sblocca Italia” law of 2014 and recently included in the National Recovery and Resilience Plan presented to the European Commission for the purposes of the Next Generation EU package. These lots are the **Cancello-Frasso Telesino**, **Frasso Telesino-Telese** and **Telese-San Lorenzo-Vitulano** sections. The project is of vital importance to southern Italy's development and will increase train service accessibility in the two areas that together account for more than 40% of the entire market output of southern Italy, covering a macro area of 15 million residents including areas at risk of depopulation.

Upon completion, the travel time between the cities of Naples and Bari will be 1 hour 40 minutes shorter, taking just 2 hours overall, while the time required to travel between Rome and Bari will decrease by 1 hour, making it a 3-hour trip. The new line will take on part of the freight currently transported by road and will allow a reduction in CO_{2eq} emissions, contributing to achievement of the goals set in the EU's transport white paper, i.e., shift 30% of road freight over 300 km to rail transport by 2030 and 50% by 2050⁴. In addition, our client RFI was awarded the Envision Platinum certification, the first project in Europe to achieve this certification, for its design for the Frasso Telesino-San Lorenzo section (which incorporates two of the lots awarded to Ghella). The Envision protocol is a sustainable infrastructure rating system, originally introduced in the US and subsequently adopted in other countries, and assesses a project's performance in terms of improvements to the community's

quality of life, stakeholder engagement, the responsible use of natural resources, protection of the environment and flora and fauna, CO₂ emissions and infrastructure resilience.

At the end of 2021, production on the Cancello-Frasso Telesino lot was roughly 53% complete. During 2021, in addition to setting up the work sites and reclaiming the areas, initial support and foundation works began in the Frasso Telesino-Telese lot, as well as some excavation and surface stripping works, while the for Telese-Vitulano lot, with approval of the Final Design, works have been scheduled to begin in 2022.

Our project at **Saint Martin La Porte** for the **Turin-Lyon** railway line represents another example of benefits associated with the reduction of road transport. The railway link is located at the intersection of two



major European transport axes, north-south and east-west, therefore playing a particularly crucial role for the transport of goods and people. The cost-benefit analysis⁵ conducted by our client TELT on the Turin-Lyon line estimates that the construction of the new line will lead to an annual elimination of about 1 million heavy road vehicles and therefore an **annual reduction in greenhouse gas emissions** of around 3 million tCO_{2eq}, equal to those produced by a city of 300,000 inhabitants. Excavation work for the Saint Martin La Porte project began in January 2015. At the end of 2021, production had reached about 99% and the project's completion is slated for the end of 2022.

With a new joint venture, in September 2021 Ghella was awarded Lot. N.1 to build the main tunnel of the new Lyon-Turin railway line on the French side. The expected duration of the contract is about 8 years and

as at 31 December 2021 the activities focused mainly on the organisation of the consortium.

RELATED LINK

Ghella.com Projects

SUBWAYS AND LIGHT RAILS

Our projects in the **subway and light rail** sector are designed to improve mobility infrastructure in highly populated cities like Sydney, Brisbane, Hanoi, Athens, Toronto and Vancouver, hence contributing to reducing direct and indirect emissions related to the use of cars and improving the quality of life of the cities' residents.

The **Sydney Metro City & Southwest** project consisted of 15.5 km of new underground twin tunnels, passing 40 metres under the bay, 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 shift from car to subway of 20,000⁶ trips during rush hour by 2036, thus significantly reducing city congestion. Other benefits include the reduced overcrowding of trains and the quality of commuting offered to passengers.

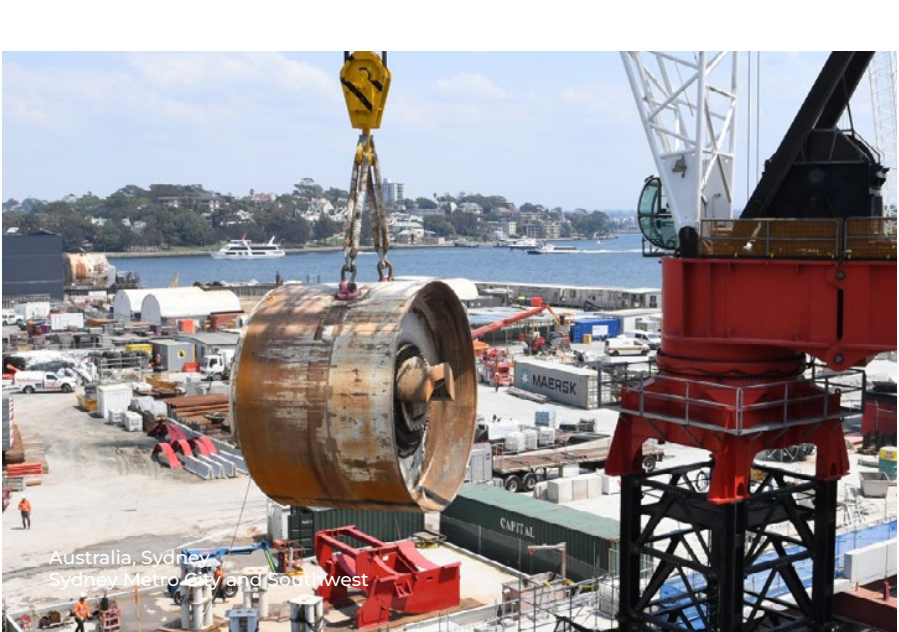
The project received several sustainability awards including the Environment and Sustainability Initiative of the Year at the New Civil Engineer (NCE) Tunnelling Festival 2019 for its sustainable management of uncontaminated excavation material, transported by barge rather than by road and fully re-used in construction projects in the Sydney area. In 2020, the project obtained two important awards confirming its high quality and innovation levels: the Major Project of the Year at the International Tunnelling Association (ITA) Awards and the Tunnelling Project of the Year at the NCE Tunnelling Festival 2020. Lastly, in May 2022 the project won the prestigious Australian Construction Achievement Award.

Thanks to an effective works acceleration schedule, the project

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Thanks to an effective works acceleration schedule, the project



was completed about one year ahead of the contractual date of November 2022, with the delivery of the last station, Barangaroo, in November 2021 and minor works completed in the first quarter of 2022.

Commenced in the second half of 2019, the **Cross River Rail** project is a light rail project in Brisbane, Australia. It includes the boring of 5.9 km of tunnels under the Brisbane River and the City Business District, the city's financial centre, the construction of four new stations and the upgrade of two existing ones. The project covers a fundamental role for the city's transport system. By building a second underground crossing of the river, currently a bottleneck for the city's rail traffic, it will reach a peak of 24 trains per hour in both directions. An estimated increase of 9 thousand passengers per day is expected by 2026 and 23,000 passengers per day by 2036, with a reduction of 526,000 km of average daily distances travelled in private vehicles. With respect to travel quality for the rail passengers, peak waiting times are expected to decrease by 24% and up to 29% by 2036⁷.

The benefits for local communities associated to the project also concern the construction phase. In 2021, the Cross River Rail project was named Large Employer of the Year at the Queensland Training Awards with 702,000 hours of training completed, 348,000 of which were delivered to apprentices and interns. In addition, the project won the 2021 QHMCA (Queensland Major Contractors Association) Innovation and Excellence Sustainability award for the initiative of using crushed recycled glass as an alternative to aggregates and quarry products of natural origin⁸. Lastly, in April 2022

the project won the Gold Quill Award of the International Association of Business Communicators (IABC) with its publication on "10,900 ways to build a social license".

The overall production has reached about 45%, with the entire excavation of the tunnel completed by the end of 2021, as per schedule.

In December 2021 Ghella, with CPB Contractors, was chosen by the New South Wales Government to build the Station Boxes and Tunnelling Works for the **Sydney Metro-Western Sydney Airport** line. This contract involves the design and construction of about 9.8 kilometres of twin tunnels and excavations for 4 stations. The new metro line will connect the residential area of Western Parkland City with work hubs and will be the main connection to the city centre for the Western Sydney International airport, in turn a catalyser for local development served by the new metro connection. It is estimated that the construction phase of the line alone will create 14,000 jobs⁹, with another 28,000 by 2031 associated directly or indirectly with the construction of the airport served by the new line.

The new line will have a peak of 12 trains per hour in both directions, with an estimated modal shift of 110,000¹⁰ cars less on the roads by 2056. The **Broadway Subway Project** in Vancouver, Canada, started in 2020.

This new line is an extension of the Millennium Line, which is part of the SkyTrain system, and will cover 5.7 km running under and above ground through six new stations.

The Broadway Corridor is the most

densely populated area in British Columbia not yet served by a rapid transit system while its population continues to rise (expected increase of 57% by 2040). At present, 59% of the local transport is by road, creating bottlenecks for the freight transport which uses the same corridor.

The Broadway Subway will serve between 143,000 and 163,000 passengers a day by 2030 and between 167,000 and 191,000 by 2045. It will make a significant contribution to reducing GHG emissions thanks to the shift from road to rail transit. Once complete, the Millennium Line will take 11 minutes, saving passengers 30 minutes a day. The new line will also replace the B-line fleet of diesel buses with the SkyTrain electric trains, generating additional reductions in greenhouse gas emissions.

In 2021, work began on all of the stations, while tunnelling will begin in the summer of 2022. The contract is currently 20% completed.

In May 2021, along with two major Canadian construction players, Ghella signed the contract for the Toronto metro, the **Eglinton Crosstown West Extension** tunneling projects (ECWE), extending the tunnels of the line of the same name by another 9 kilometres.

The project meets the population growth estimates of the GTHA (Great Toronto and Hamilton Area) from the current 7 million to 10.1 million by 2041. It has been estimated that by the same year, the project will help increase the percentage of the population of the GTHA having a station within walking distance from the current 38% to 49%¹¹. There will be an estimated traffic of 37,000 passengers per day, leading to an

estimated reduction of 39,000 tCO_{2eq} linked to the modal shift from car to train.

In 2021, the design activities were developed and the construction of the launching shaft for tunnelling was completed. Excavation began in April 2022. The contract was 10% completed at the end of 2021.

The **Pilot Light Line 3** of the **Hanoi Metro** is part of an important project funded by the Asian Development Bank (ADB) to encourage the country's economic growth and decongest the Vietnamese capital's traffic by creating a new integrated public transport system with eight metro lines to be completed by 2050. The new metro system has been designed to meet the need to align the city's transport infrastructure with its huge demographic growth of the last decades (the capital has a population of nearly 8 million residents with an average age of 27)¹². At present, around 90% of the transport modal share is held by private vehicles, mostly motorcycles, which will presumably be replaced by cars thanks to the steady growth in per capita income.

Once it is fully operational, the metro will have a capacity of 200,000 passengers a day and Line 3, also known as Văn Mieu Line (Temple of Literature Line), will be the city's most used underground network. The project will contribute significantly to reducing GHG emissions and ensuring better air quality, to the benefit of the residents' health and safety. In addition to the numerous environmental and economic advantages of this important infrastructure, the contractors will pool their technologies and technical expertise during the project's

performance, involving local resources in the workforce. At the end of 2021, the Pilot Light Line 3 project was around 30% complete, for the 4 stations only, and is currently put on hold.

Once completed, the extension of the **Athens Metro** to Piraeus Harbour will serve an average of 132,000 passengers per day. The new line will make it possible to travel directly from Athens International Airport to the harbour in 45 minutes. Our client Attiko Metro has estimated¹³ that there will be an average reduction of 23,000 vehicles per day in that area for a daily reduction of about 120 tCO_{2eq}.

In addition to the technical challenges posed by the different geological formations encountered during the excavations, significant archaeological finds were made during the works, allowing us to contribute to the discovery of important artefacts now preserved in the state archives. Some of these will be exhibited in the metro stations, turning them into museums for the sections of mandatory transit.

Three of the six stations of the Athens Metro were opened to the public in July 2020 and are now in use. At the end of 2021, more than 94% of the project had been completed.

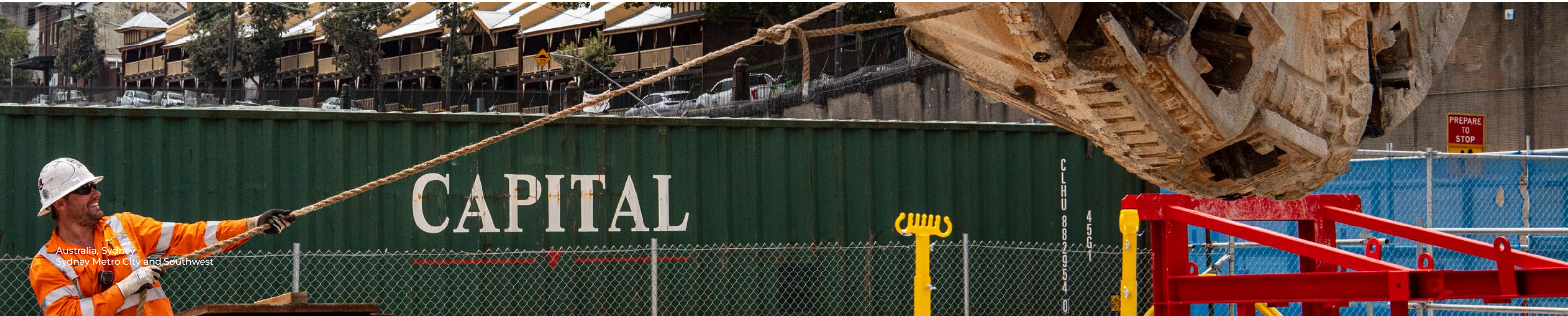
ROAD PROJECTS

In May 2021 Ghella, in a joint venture with CPB Contractors and UGL (CIMIC Group), was chosen by the New South Wales Government to deliver the first stage of the **M6 motorway of Sydney** project.

Stage 1 of the M6 will connect the South Sydney areas to the city's

broader motorway network by creating 4 km of twin tunnels and a connection ramp. Moving the road traffic underground will allow vehicles to avoid 23 traffic lights on Princes Highway, cutting travel time and congestion caused by traffic. At the same time, the section of surface road will be more available to the local community, also through the addition of new bike lanes. We have estimated that the project will reduce the number of lorries on surface roads by more than 2,000 units / day¹⁴.

The design activities are at an advanced stage and excavation in the main site of Arncliffe began in February 2022.



Australia, Sydney
Sydney Metro City and Southwest

WATER INFRASTRUCTURES

All our water works, for the Matanza Riachuelo wastewater network project in **Argentina**, the Central Interceptor project in **New Zealand**, the Median Collector project in Turin, **Italy**, and the Clean Water Tunnel for water supply in **Norway** are conceived to improve the living conditions of local communities and mitigate their environmental impact.

The **Matanza Riachuelo** Project is one of the most important water purification projects at international level. It will significantly reduce the pollution of Rio de la Plata, one of the world's most polluted rivers, and improve the quality of life of the local population. This project is part of the Matanza-Riachuelo Basin (MRB) Sustainable Development Project, funded by the World Bank, involving 7 million local residents, of whom 10% live below the national poverty line¹⁵. The area where the worksite is located is mainly residential with very varying socio-demographic characteristics and also includes businesses, warehouses and commercial areas. As a result, the local communities' needs have been given priority in a strategy designed to manage all stakeholders' expectations.

In 2021 the final surface works were carried out, the wells and tunnels and the last minor Pipe Jacking excavations were finished, as well as all of the site retirement. At the end of 2021, the project was roughly 98% complete.

The **Central Interceptor** project was commenced in New Zealand in 2019 to bore the longest tunnel in this country with a length of 14.7 km. The tunnel will reduce Auckland's wastewater overflows due to stormwater into the Waitematā Harbour and Manukau Harbour by 80% with a consequent significant improvement in the bay's environmental conditions and biodiversity. The new wastewater system will be sized to serve the city's fast growth over the next 30 years, where residents are expected to increase by one million.

The completion of the Central Interceptor project is slated for mid - 2026. At the end of 2021, approximately 35% of the works had been carried out.

Work on the **Turin Median Collector**, awarded in April 2019, comprises the design and development of the median wastewater network in the south-western area of Turin (Italy) and the rehabilitation of the existing southern system. The collector will become the new backbone, parallel to the current collector and necessary to avoid the overloading of Turin's wastewater system. It will collect and store the first stormwater, i.e. those waters which, at the beginning of rainfall, are full of pollutants such as hydrocarbons and mineral oils. The new 14 km underground tunnel will benefit 50 municipalities in the northern

area and 30 in the southern area by reducing the level of pollutants in the wastewater and overflows in the entire area served.

Work on the final design began in September 2021 and is still underway, and it is expected to be validated within the first six months of 2022.

In November 2021, Ghella presented an offer, in a 40% joint venture with one of the largest Norwegian construction companies, to build a new water tunnel (**Clean Water Tunnel**) to supply water to the city of Oslo.

The project responds to the need to strengthen and make the current water line more efficient in view of an estimated increase in inhabitants of 200,000 for the city by 2040 and plans on reducing network losses by more than 10 percentage points (from the current 30% to less than 20%)¹⁶. In February 2022, the 69-month contract was awarded and signed.

Profile



MARCO FONTANA
Managing Director Ghella PTY
Australia

How long have you been at Ghella and how have you grown within the company?

I began my journey at Ghella in the summer of 2016 when I was tasked with opening our first office in Dubai. It was at this point we were awarded our first project in the Middle East – the Mohammed bin Rashid Al Maktoum Solar Park Stage 3 – one of the largest photovoltaic plants ever built to date. After ten years in the United Arab Emirates, three of which were with Ghella, in 2019 I received the offer to move to Australia as Managing Director of the Australian operations, a position that I still hold today.

Can you briefly describe your role?

My day to day involves the coordination of resources that we have in the country, ensuring that current projects are managed in line with company procedures and Australian safety standards. I assess and implement new initiatives, creating the best conditions for winning new projects whilst growing our brand in Australia. I am fortunate to have the support of an incredibly talented and passionate team both here in Australia and from our headquarters in Italy.

How important are sustainability aspects in the world of Australian infrastructure and how are these aspects implemented in the work sites?

Australia is one of the most advanced countries in the world in terms of its environmental and sustainable development. This is largely due to the very strong connection with nature and the awareness of the catastrophic impacts that climate change has on such a delicate and unique ecosystem as the Australian one. The recent disastrous fires and floods that affected the country over the past two years are a prime example of this. The debate on how infrastructure can aid the Australian government's objective of achieving "Net Zero" by 2050 is very current and all projects with a monetary value above a given threshold are required to have a sustainability rating. Clients are pushing to incorporate increasingly ambitious sustainability targets whilst contractors recognise offering innovative solutions that generate positive environmental and social outcomes can be the

key element of differentiation to winning a project. This thereby creates a "virtuous sustainability cycle".

You partook in the process of defining the company's new targets for 2030. What do you think the added value is for us to have set quantitative commitments?

Setting ourselves objectives and pursuing them is the only credible way to generate extensive and radical changes. Defining our new company targets for 2030 was a collaborative and engaging process and I am proud to have played a role in the process. The objectives that the company have set will strengthen the trust our stakeholders have in us to successfully evolve towards a more sustainable future.

The IS rating, Infrastructure Sustainability

All our projects in Australia (Sydney Metro City and Southwest, Cross River Rail, Sydney Metro – Western Sydney Airport and M6) and in New Zealand (Central Interceptor) are rated using the Infrastructure Sustainability (IS) system of the **ISC (Infrastructure Sustainability Council)**, a non-profit body focused on the sustainability of infrastructure projects. IS grades the sustainability of infrastructure projects during the work's planning, design, construction and operation.

For example, the Central Interceptor contract has an As-Built target rating of Excellent, which it should achieve by the end of the project. The rating includes the definition of a base case, which comprises a calculation of the design's carbon footprint, that has to be improved to reach the score required by the client. On the other hand, the Sydney Metro City and Southwest project obtained the

highest IS score ever awarded, with the 'Leading' rating going to the John Holland CPB Ghella (GHCPBG) JV for the design of the TSE (Tunnel and Station Excavation) works. In 2021, the Cross River Rail project was awarded by ISC with an Excellence in Social Outcomes Award for its Training Employment Working Group, an initiative aimed at creating opportunities for disadvantaged and under-represented social groups.

The experience gained during these projects thanks to the IS rating is a strategic asset for Ghella, in a global context where the sustainability of works throughout their life cycle (including the construction phase) is of increasing importance.





Italy
Photovoltaic

RENEWABLE ENERGIES

As well as working in the large public infrastructure sector, we are active in the **renewable energy** sector. We develop, build and operate mainly photovoltaic and hydroelectric renewable energy power plants in Italy, Central America and the Middle East.

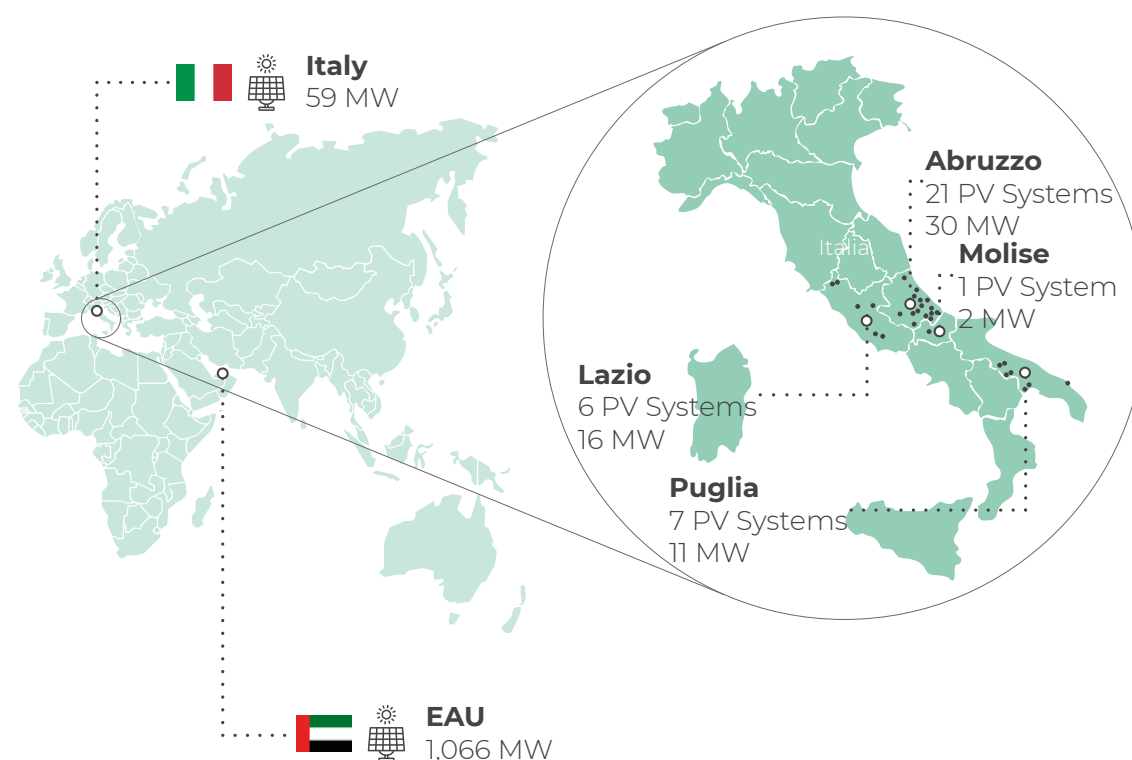
In Italy, we have installed a total power of 60 MW in proprietary **photovoltaic** power plants, producing about 88 GWh on average per year.

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 output of 2,000 GWh.

The project included the installation of 3 million photovoltaic panels over about 20 square kilometres of desert areas.

The DEWA Phase III plant has been operational since July 2020 and we continue to provide O&M services.



Renewable energy projects



Our photovoltaic power plants: benefits for the environment and communities

Since 2010, in parallel to the company's tunneling core activities within infrastructural projects, we have developed and strengthened our presence in the **construction and management of photovoltaic power plants in Italy**, through participation in our subsidiary **Gransolar Chella**.

This branch of the company contributes directly to the objective illustrated in the Italian Ecological Transition Plan⁷: reaching 72% (in comparison to the current 35%) of electrical energy from renewable resources by 2030. In addition, this branch indirectly boosts production and employment opportunities in an increasingly important **supply chain**.

To date we have installed **60 MW** overall in photovoltaic power plants in Abruzzo, Lazio, Molise and Apulia. The overall energy production since the beginning of operations has been more than **950 MWh**, equivalent to saving **470,000 tCO_{2eq}** in emissions associated with the energy generation, of which about **42,000** in the last year. On average, the energy production of our power plants is equivalent to **74% of Chella's annual** electrical energy¹⁸ global consumption.

Our power plants are either private or built through **agreements** signed with **Municipal Administrations**, like in Abruzzo and Lazio. Our presence in the area is therefore a drive for **opportunities**, both **socially** and **environmentally**.

Our plants have allowed Municipalities to realise considerable economic benefits, thereby generating a **shared value** with the community, through:

- improving **services to citizens**, such as shuttle buses for schools, lowering taxes, sports facilities for the youth, support for low-income families;
- **actions to reduce electrical consumption** through the use of LED lightings and small photovoltaic systems for municipal utilities;

- creating **city green areas**.

In addition, our longstanding presence in the area has led to the creation of a relationship of trust and support with Local Administrations which, in some cases, has seen our direct participation in **city road maintenance** projects, contributions to **youth social events** and school field **trips** to the plants aimed at raising **awareness** on the topic of renewable energy.

At the end of 2021 we have commenced a series of studies for **revamping** and **repowering** projects required on those photovoltaic power plants having modules that have deteriorated more than what had been forecasted in 2010, some of which have not yet reached the end of their life cycle.

To maximise **recovery** opportunities and to promote the **circular economy**, we conducted a survey of the recoverable materials and ensured that the recyclable materials would be sorted and valued during waste collection. A study has also been conducted on the general impact of the revamping operations in terms of CO₂ in order to minimise its overall impact.

Particularly worthy of note is the initiative to **donate** a share of the **working modules** to the **Municipalities** where the plants are installed. The modules will be used to build small systems for municipal energy needs, thereby mitigating the significant increase in the cost of grid energy recorded in recent years.

Finally, opportunities for **reusing** performing modules on **huts and base camps** at our work sites are also being evaluated, with the authorisation of the relative Clients.



Italy
Photovoltaic



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 the subcontractors working on our worksites. We monitor our **supply chain** to ensure that **Human Rights** are respected and suitable **working conditions** are guaranteed.

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

Our focus on social inclusiveness is not limited to the group companies: we listen to the expectations of the **local communities** that 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.

Having obtained the Social responsibility certification SA8000 is further demonstration of the care that we have for our people and the willingness to commit to the development and protection of human capital.

Our people

As declared in the Code of Ethics, people are at the centre of our organisation, as they are our main strategic asset. Not only because having enthusiastic and highly qualified personnel is essential to performing work to a professional standard, but most of all because we believe

that sharing and exchanging ideas and values are crucial to achieving excellence. Through careful and conscientious management, we promote trust, transparency and collaboration, striving to create an open and inclusive work environment.

Men

P: 1524

T: 75

OCT: 9



95 %

Of our male employees have a permanent contract

■ P ■ T ■ OCT

Women

P: 289

T: 19

OCT: 2



Of our female employees have a permanent contract

93 %

Project staff by contract type and gender
P = Permanent; T = Temporary; OCT = Other type of contract

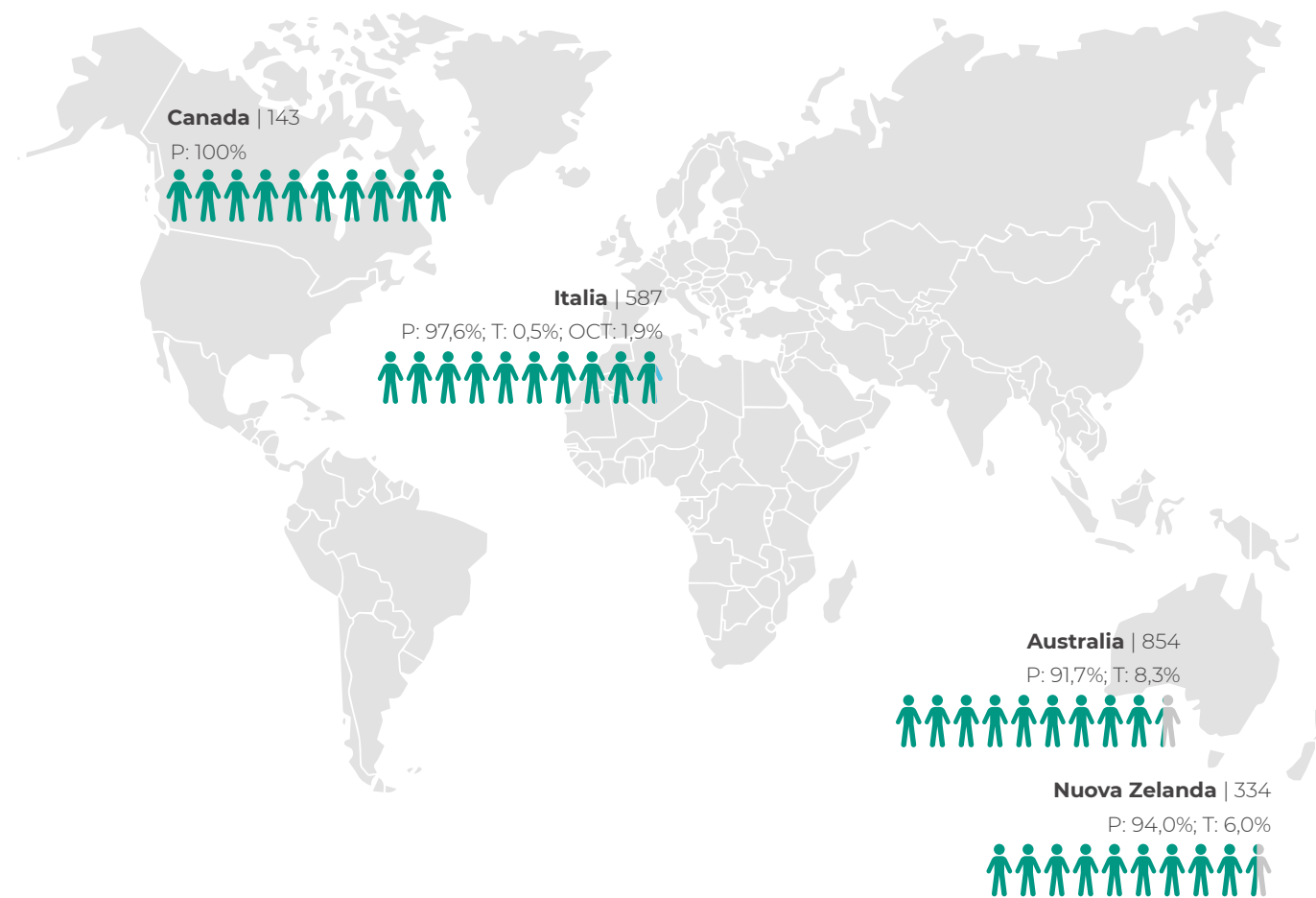
The direct employees of the sites included within the reporting scope are 1,918, of which 16% are women, slightly up from the data recorded the previous year. The drop in number of direct employees in comparison to 2020 owes to the fact that several work sites at the end of their life cycle are no longer within the reporting boundary.

96% of male employees and 99% of female employees is employed locally, meaning that they reside permanently

in the country where the Project is located. Given the nature of our business, with production carried out at worksites with a set life cycle in different locations around the world, workers are given employment contracts for the duration of the project. This is why it is preferential to re-employ personnel in new projects, when the time frames allow for it, in order to promote the development of the resources who are already part of the work force and boost the company's assets and know-how.



Italy, Rome
MAXXI exhibition "Di Roccia, Fuochi e Avventure Sotterranee"



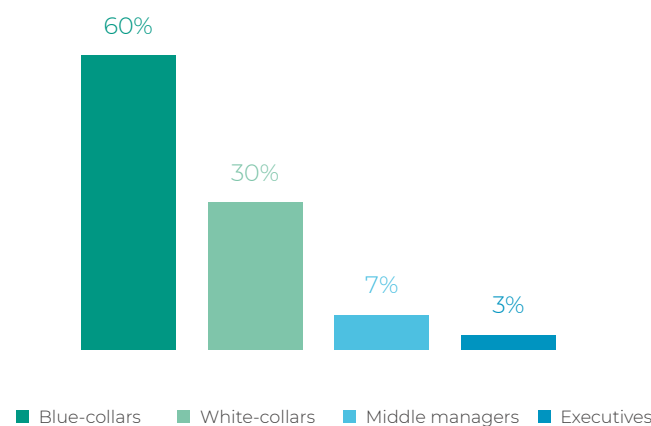
■ P ■ T ■ OCT

Division of project staff by contract type and geographical area.
P = Permanent; T = Temporary; OCT = Other type of contract

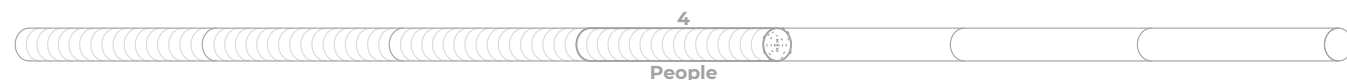
Since the various stages of the project require different technical skills, there is a physiological turnover during the life cycle of the project which requires an albeit limited use of temporary or non-typical contracts.

97% of temporary contracts are offered in Australia and New Zealand. Specifically, in 2021, the Australian Cross River Rail work site went through the core phase of TBM tunnelling which required additional professional figures.

Only 0.6% of employees had part-time contracts, 8 of which were women and 3 were men. In 2021, 1,238 workers were not directly employed, 98% of which were blue-collar workers of subcontractors. Other types of workers non-directly employed included in this figure are design consultants and interns. Due to the nature of our business, the majority of employees, whether employed directly or not, are blue-collar workers.



Division of workers by professional category (% of the total)



Like all elements of the company's Integrated Management System, HR policies and procedures apply to all the activities of Ghella S.p.A. and its subsidiaries and associates, regardless of their geographic location.

During the construction phase, operational controls and monitoring of the significant aspects relating to human resources are carried out by our site HR teams, who report on them periodically to the client and the headquarters.

This flow of information allows us to **monitor the**

performance of human resources at corporate level as well, both for the individual projects and as consolidated global data.

Our commitment to the **continuous improvement** of corporate performance in the HR area is expressed through specific actions and targets contained in our **corporate Sustainability Plan**. In particular, objective 2 of the plan is to "Promote the development of human capital and people well-being", and our target for 2030 includes the attainment of 30% of women in managerial positions.

DIVERSITY AND INCLUSION

We work to create a work environment that removes all obstacles towards an equitable employee gender distribution. This is why we have included 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** solely based on their merits and the applications received by the company, keeping track of the curriculum vitae analysed during the screening phase and excluding any sensitive information that could lead to discrimination from an evaluation perspective. To date, the company has people of different nationalities, genders and ages, in a multicultural and stimulating working environment.

We **condemn** any form of **discrimination** and we promote a culture of respect of the EDI principles, also through specific training. 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 keeping a good work-life balance. Specifically, all people within this group are allowed to work remotely without any limitations to deal with family needs.

97% of employees who had the right to parental leave⁹ used it. The one worker who did not use their parental leave availed of a different form of support.

Parental leave by gender	unit	Men	Women
Employees who had the right to parental leave	n.	24	10
Employees who availed of their parental leave	n.	23	10
Employees who went back to work during the reporting period after having availed of parental leave	n.	18	6
Employees who went back to work after availing of their parental leave and who are still employees of the organisation during the 12 months after their return to work	n.	11	6



The data confirms the commitment made to support people in the delicate phase of new-parenthood, encouraging them to take the due time off.

2021 confirmed a similar representation of employees by gender into the four professional categories as last year's. Specifically, there are more white-collar women and

less middle managers. The number of women executives has risen slightly.

Blue-collar women workers are still a minority in our organisation and are present only at the Cross River Rail and Central Interceptor work sites.

		2019		2020		2021	
		Men	Women	Men	Women	Men	Women
Executives	n.	58	6	77	8	74	8
Middle managers	n.	187	55	279	92	171	41
White-collar	n.	754	276	1.227	445	695	252
Blue-collars	n.	850	5	1.663	31	668	9
Total	n.	1.849	342	3.246	576	1.608	310
Executives	%	90,6%	9,4%	90,6%	9,4%	90,2%	9,8%
Middle managers	%	77,3%	22,7%	75,2%	24,8%	80,7%	19,3%
White-collar	%	73,2%	26,8%	73,4%	26,6%	73,4%	26,6%
Blue-collars	%	99,4%	0,6%	98,2%	1,8%	98,7%	1,3%

Gender representation by professional category in 2019, 2020 and 2021



Division of employees by professional category in 2021 (% of total number for each gender)

Driven by the willingness to encourage an inclusive work environment that guarantees equal opportunities, we set the objective of having, by 2030, 30% of women in managerial roles. In 2021, women in executive and middle management positions represented 16.7% of total employees in the same positions. In 2021, the 30-50 age

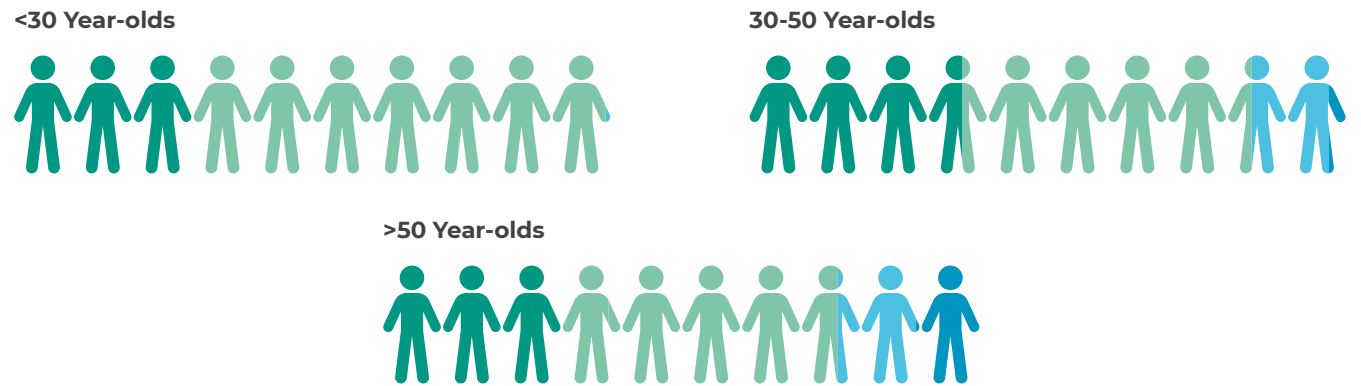
group was the most numerous, with 1,123 employees, i.e. 58.5% of the population within the reporting scope. The variations in the division for the three age groups in comparison to last year are partly due to the honing of the data tracking and collection tools which, in 2021, allowed us to collect more precise information.

When considering only direct employees of the sites within the reporting scope, the category of white-collar workers is the most numerous in every age group. Middle

management are equally represented percentage-wise in the 30-50 and 50 + groups.

		2019			2020			2021		
		<30	30-50	>50	<30	30-50	>50	<30	30-50	>50
Executives	n.	0	24	40	1	43	41	0	32	50
Middle managers	n.	6	190	47	93	193	80	2	147	63
White-collar	n.	245	677	107	551	896	229	220	544	183
Blue-collars	n.	159	518	178	516	874	305	97	400	180
Total	n.	410	1.409	372	1.161	2.006	655	319	1.123	476
Executives	%	0,0%	37,5%	62,5%	1,2%	50,6%	48,2%	0,0%	39,0%	61,0%
Middle managers	%	2,5%	78,2%	19,3%	25,3%	52,8%	21,9%	0,9%	69,3%	29,7%
White-collar	%	23,8%	65,8%	10,4%	32,9%	53,4%	13,7%	23,2%	57,4%	19,3%
Blue-collars	%	18,6%	60,6%	20,8%	30,5%	51,5%	18,0%	14,3%	59,1%	26,6%

Comparison between 2019, 2020 and 2021 of the number of employees by professional category and age group



<30 Year-olds	30-50 Year-olds	>50 Year-olds
Blue-collars 30,4% 97	Blue-collars 35,6% 400	Blue-collars 37,8% 180
White-collars 69,0% 220	White-collars 48,4% 544	White-collars 38,4% 183
Middle managers 0,6% 2	Middle managers 13,1% 147	Middle managers 13,2% 63
Executives 0% 0	Executives 2,8% 32	Executives 10,5% 50

Division of project staff by professional category in each age group

DEVELOPMENT OF HUMAN CAPITAL

Developing expertise, growing and enhancing each employee's skill-set, is a key element for achieving our corporate objectives and for the creation and promotion of a culture aligned with our values.

The training process involves identifying the training needs for all of our personnel. We follow each resource to connect with them and identify the best ways of delivering training, such as on the job training, internships and e-learning.

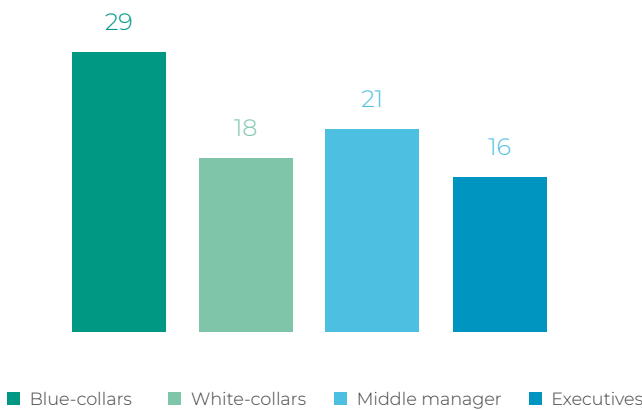
When identifying training needs we always take into account consistency with company values, policies and strategies. We use inter-professional funds to co-finance non-mandatory training activities, ensuring ongoing upskilling.

In 2021, a total of **39,216 hours** of courses were delivered to the direct employees of Ghella S.p.A. and of the Projects within the reporting scope. Below are the details by gender and professional category.



Average hours of training for female and male employees

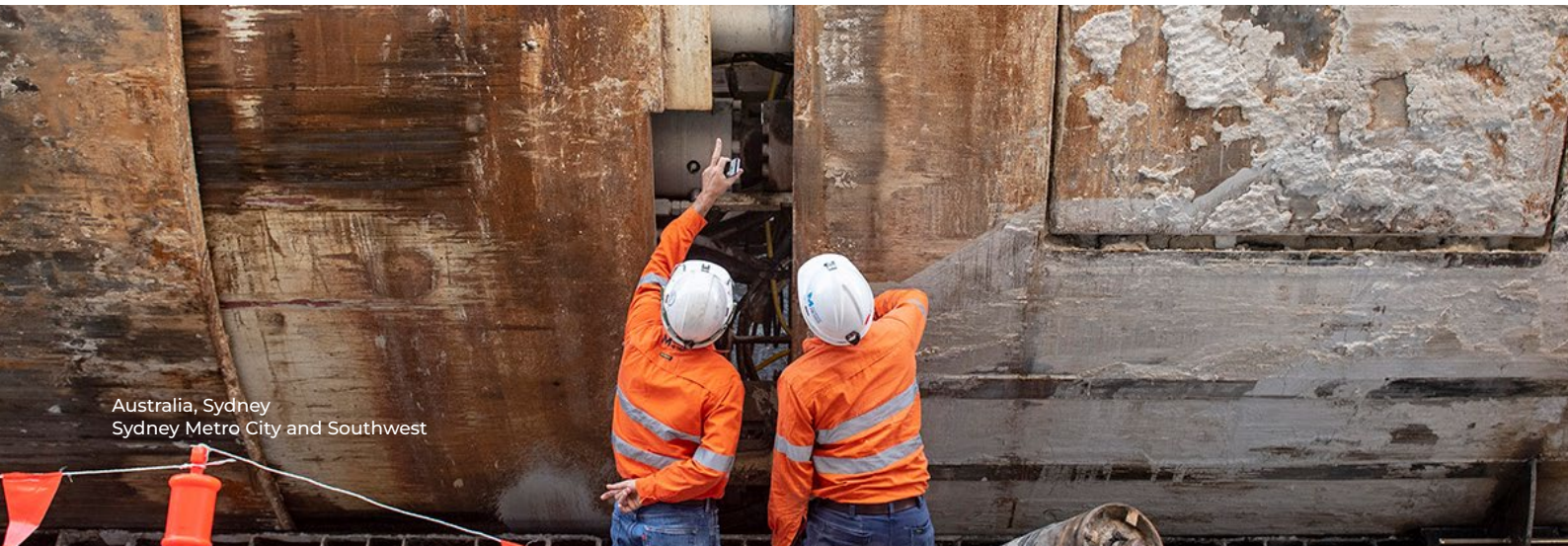
The average hours of training are almost the same for male and female employees. Of the professional categories, the majority of recipients of training initiatives, especially on health and safety, are blue-collar workers.



Average hours of training by professional category

21% of delivered training hours pertain to health and safety, including compulsory and non-compulsory courses (for example, Refresher course on measures to prevent the spread of Covid-19). Equal importance is given to the

technical development of workers, to whom 21% of the overall training was provided. 3% of the training hours is dedicated to the Leadership Programs and 2% is on social responsibility themes.



Australia, Sydney
Sydney Metro City and Southwest

REMUNERATION AND INDUSTRIAL RELATIONS

Remuneration levels are defined in accordance with the principles of fairness and are commensurate with the experience and qualification of the resource and in no way can they be lower than the minimum wage levels established by law or collective agreements.

We value dialogue with trade union organisations as an instrument for negotiation, consultation and exchange of useful information, and we encourage the application of collective agreements, where they are in place.

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

An additional means for engaging workers is the Social Performance Team (SPT), set-up following the SA8000 certification, which includes a balanced representation of worker and management representatives. This team

has the task of periodically conducting risk assessments in the relevant areas for the Standard and monitoring activities in the workplace.

In 2021, 42% of employees of the production units and headquarters included in the reporting scope was covered by collective work contracts. For the remaining part of direct employees, individual agreements are stipulated in observance of local laws. Coverage is 100%, in every geographical area we operate in, if we only consider blue-collar workers. In Italy, the share of those who signed the Construction and Industry National Labour Collective Agreement is close to 100%.

We do not discriminate in any way when determining remuneration. Nevertheless, it is necessary to consider that we are working in a context where the majority of the specialised technical professionals available on the market are men. For the same tasks and job classification level, we aim to ensure wage equality.



Ratio between the average wage of women and that of men in each professional category for the headquarters staff only. The comparison is made keeping task and job classification equal

Best HR Team

In 2021 many initiatives were launched to promote the development and well-being of people at Ghella, culminating in the award of the **“Best HR Team” certification** by HRC Italia for the **Talent Acquisition, Welfare & Wellbeing** and **Digital Transformation** categories.

Talent Acquisition

The **Rookies programme** is intended for youths aged between 24 and 30, with a degree or close to obtaining one in Civil/Construction/Management Engineering, Business or Management who are offered a customised development path within the company, through:

- individual training
- the appointment of a mentor, who facilitates rookies integration into the corporate context;
- periodic performance assessments, stimulated by ongoing dialogue with reporting managers and with the HR Team to identify potential corrective actions.

Rookies are also offered a benefit package which includes board, transport and return trips to their place of residence. In 2021, 5 resources were onboarded through the programme and for 2022 we plan on adding 15 more, in Italy and abroad.

Welfare and Wellbeing

2021 was the year of post-Covid recovery, during which,

more than ever, it was necessary to adopt risk mitigation solutions and support to employee health. To respond to this challenge, Ghella began the **Covid Check-up programme**, which offered voluntary weekly screening with Molecular RT-PCR or COI testing conducted on site. In addition, all employees that have not been hospitalised following a Covid-19 infection, upon returning to work are offered a medical check-up at the multivalent office of the company physician, which includes:

- Heart check-up
- ECG
- Cardiac echo
- ECG Max
- Cycle ergometer

Currently about 200 people are involved in the testing cycle, while around 40 have had the post Covid-19 check-up.

Digital Transformation

Lastly, the **HR R-Evolution programme** boosted the digital tools for the management of the HR processes, in order to achieve an integrated reporting that guarantees transparency in the processes and improves employee experience. In particular, with the **SAP Success Factors platform**, employees can access their profile, training content and periodic performance assessments through a single tool.



SUSTAINABILITY CULTURE

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

We believe that creating awareness and informing employees is crucial to improving performance. This is why we carry out campaigns, both centrally and on-site, on areas to which all workers can contribute, 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 excavations, 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 worksite offices are a model of responsible management

of natural resources, where the work environment plays an active role in creating a culture of sustainability.

The company's intranet page is one of the most useful tools for spreading the company's sustainability culture. Here one can find news covering diverse topics: information and updates on worksites, our history in brief articles, the humanitarian or social causes that we promote, the sustainability initiatives carried out at the headquarters and in the worksites. Together with other tools, such as the corporate photographic archive, the intranet helps us keep the relationship between offices and worksites alive by encouraging curiosity through images and sharing stories.

The updating process of our ESG Strategy was interspersed with moments of in-person training and exchange, to ensure that the definition of the mid-term objectives and the creation of levers and actions aimed at meeting them occurred in an aware and informed way.

Profile



ANDREA CALÌ
Deputy Project Director,
Broadway Subway, Canada

How long have you been at Ghella and what has been your journey to date?

I have been at Ghella since 2018, when I was appointed to run the Follo Line worksite in Oslo, just before the excavation works were completed and the civil and electromechanical works were started. For the ten years prior, I had worked for a major Italian company specialised in railway and electrification equipment, in roles of increasing responsibility in Mozambique and Egypt, eventually becoming Foreign Sales Director. During a joint tender in Argentina, I had the chance to learn about Ghella and appreciate their professionalism and work ethic. In particular, the strong sense of belonging to the company and the attention to people's needs are the values that I most relate to and that made me accept the offer to go manage what was one of Ghella's most challenging worksites in the international panorama. After almost five years in Ghella worksites, I am increasingly proud to belong to this "family", made of great people and excellent professionalism.

Can you briefly describe your role?

I am currently the Deputy Project Director of the Broadway Subway Project, to build, in consortium with the Spanish company Acciona, the extension of an urban metro line in Vancouver, Canada. As the main Ghella senior representative on the worksite, I share the management of the entire project with my Spanish colleague, with direct responsibility over the production team and organisation of the works for the construction of 5.7 km of a new twin-track line (of which about 4 with TBM tunnelling) and 6 underground urban stations.

What importance has been given to the sustainability aspects in the world of Canadian infrastructures and how are these aspects integrated into the worksites?

I was particularly impressed by the level of maturity of the Canadian market in terms of equal opportunity. The adoption of inclusive policies for access to even senior positions in the project organisation means that the managerial and operational roles are reasonably distributed over the various genders and without any discrimination

whatsoever. In reference to our project, about 30% of the entire organisation and 20% of the managerial roles are covered by women, a higher percentage than the Canadian average which is around 15%. In addition, the inclusion of ethnic minorities, such as indigenous groups, is directly governed by competent authorities requiring contracts to contain minimum objectives and penalising mechanisms if these are not met. Our Project Agreement includes, for example, the assignment of at least 18 million dollars to 3 indigenous groups of reference in the area and every year the recruitment of at least 45 employees of these ethnic minorities.

You partook in the process of defining the company's new ESG targets for 2030. What do you think is the added value for the organisation to have set quantitative commitments?

I believe that establishing and meeting quantitative sustainability objectives, in addition to demonstrating our social responsibility towards the environment and the community, is a major part of Ghella's presentation to international customers and lenders who are increasingly more demanding and attentive to sustainability issues. This helps strengthen our reputation of Italian excellence in the construction sector across the globe.



New Zealand, Auckland
Central Interceptor



Health and Safety

The health and safety of our people represent an absolute priority. Through the protection and safeguarding of our workers, we aim to pursue excellence in our work.

The correct management of these issues has always been at the centre of our *modus operandi* and we formalised this approach in 2010 by adopting an **Integrated Management System** whose component relating to **Occupational Health and Safety** is certified in accordance with the international standard **ISO 45001: 2018**. In addition, in 2021, we obtained the certification according to the SA8000 Standard.

We apply a **risk-based thinking** approach to identify and assess all risks present in the workplace and that could impact our stakeholders. An approach that allows **continuous improvement** of our performance and takes into account the context and requirements of the stakeholders, including our partners, determining the **risks and opportunities** that need to be managed to ensure the highest standards of Occupational Health and Safety.

As we run our projects, we manage potential risks in terms of Health and Safety with competence and experience, mitigating them through fruitful collaboration with specialised partners.

Our operations 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 to eliminate or minimise them. Accordingly, we use the **know-how** gained over many years of experience in the sector, taking into consideration the lessons learned and we spread **knowledge sharing** practices within the company: in this way, we analyse incidents by investigating root causes and defining the corrective and improvement actions that stem from this analysis. Through risk assessment activities, we identify education and **training** requirements and **health surveillance** measures for all workers exposed to health risks.

The **engagement** of our stakeholders, such as subcontractors, clients or third parties, in the risk assessment process is of utmost importance: everyone can and must report inappropriate/illegal behaviour, dangerous situations or violations of the health and safety principles, or suggest improvement actions. For this reason we have activated **dedicated communication** channels, through workers' representatives, with the use of observation cards, promoting the involvement and participation of workers and guaranteeing freedom of reporting with no danger of repercussions (as set forth within our Whistleblowing policy and Social responsibility policy SA8000). Workers' representatives are also involved

in the analysis of accidents and are informed on the trend in injuries and health monitoring as well as occupational health and safety information and training programmes.

In observance of the SA8000 standard, a **Health and Safety Committee** was created in the same form as the Social Performance Team, committed to the continuous improvement of health and safety conditions in the workplace. It periodically and formally conducts risk assessments to identify and face real and potential risks to worker health and safety.

Our **corporate structure** is comprised of specialised and updated people who work to guarantee the best health and safety conditions for all workers involved in our activities, whether internal or external. In particular, our technical staff have the necessary expertise to design the Safety features of our worksites in accordance with the relevant European and international regulations, thereby ensuring the most suitable and innovative safety measures are implemented. Our organisation allows for ongoing oversight of operations, thanks to a **hierarchy of controls** defined and implemented through a cascade mechanism by all the parties involved in the activities, starting from senior management down to the operational personnel.

Training is a fundamental tool for us to ensure the development of expertise and increase awareness of individual responsibilities and promote participation in relation to worker safety. It also encourages the workers' engagement in safety issues. Training is carried out in different forms (such as induction, on-the-job training, internships, e-learning, daily or weekly toolbox talks, Job Safety Analysis, etc.) depending on the needs and set objectives and taking into account the context and local legislation. Due to the continued health emergency caused by the COVID-19 virus pandemic, we stepped up health and safety training, information and awareness-raising initiatives during 2021, using video conferences and e-learning, notices and infographics published on the intranet, as well as affixing special information signage on the correct measures to be adopted to combat the spread of the virus.

We identified training requirements by analysing risk assessments and monitoring each resource individually to identify their specific needs. Training provided to each employee in 2021 mostly focused on the following topics:



Coronavirus risk management and related prevention measures;



Reference legislation;



Mandatory training required by laws in force in each location;



Emergency management;



The Health and Safety and Emergency Organisational structure;



First aid and fire-fighting;



Company Management system, with special reference to SA8000 requirements;



Other training required by current legislation in the specific work place.



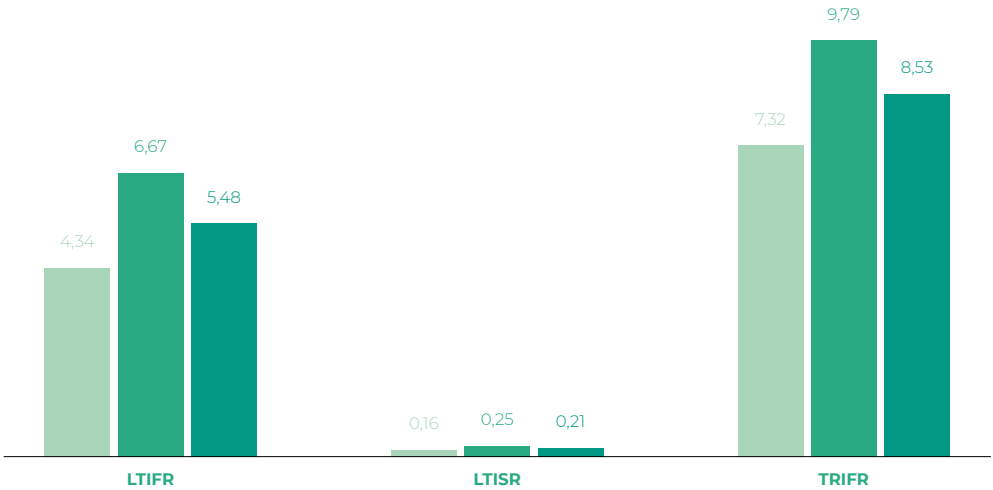
Assessment of health and safety risks associated with business activities and in particular those connected to the tasks that workers are exposed to;

To promote the Health of our workers, in addition to defining and implementing a health protocol, we rolled out awareness campaigns on the importance of prevention by adopting a correct lifestyle to promote the health of our workers. The Coronavirus Crisis Operational Committee was still in place in 2021. It was in charge of identifying and promoting the most effective containment strategies, which were included in the internal Coronavirus Risk Management Plan. The committee updated these strategies regularly in line with the alarm levels communicated by the government and scientific research bodies.

We monitor injuries by analysing them, in order to identify improvement actions aimed at preventing future

occurrences and to spread a culture of Health and Safety among our people and all the stakeholders involved in our activities. We are committed to achieving our primary Health and Safety objective of zero harm through training and engagement initiatives, aimed at encouraging the active participation of everyone. As of this year we are reporting injury indices (frequency index - LTIFR²⁰, severity index - LTISR²¹ and total frequency index - TRIFR²²) on Ghella's entire operational scope. This is because we consider the strategy in terms of health and safety as a one thing and we assess our performance on the basis of the overall data of the production units. Below is a presentation of the trend in injury indices for the reporting period and the comparison with the two previous years.

■ JV
■ SUB
■ JV+ SUB



Trend in injury indices for the year 2021 for JV employees, subcontractors and total

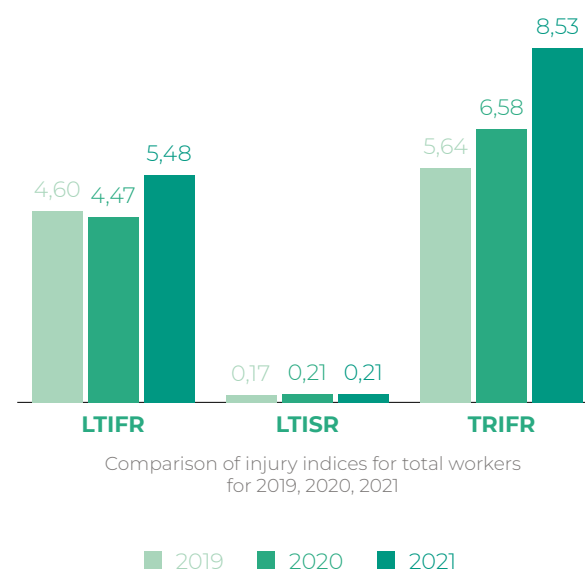
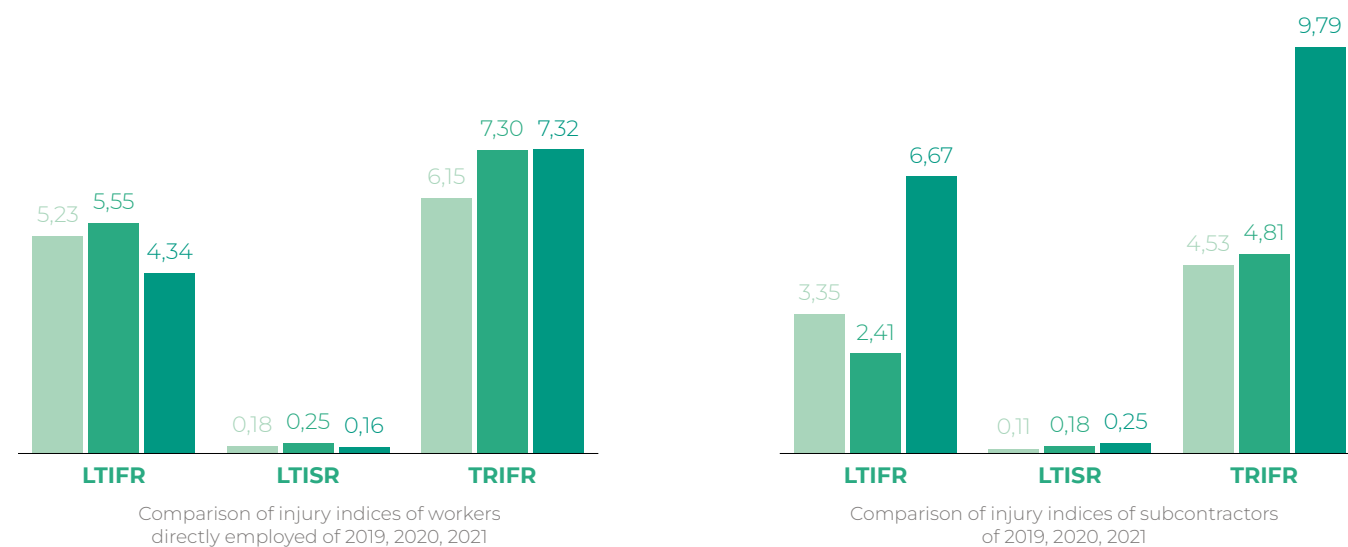




Italy, Rome
MAXXI exhibition "Di Roccia, Fuochi e Avventure Sotterranee"

For employed staff, the analysis of the injury indices shows that LTIFR is down by 20% and LTISR is down by 35%. On the other hand, for subcontractors, these same indices increased. This is enough to lead to an increase in the overall LTIFR in comparison to the previous year. Many projects this year have gone through very intense phases

and have been affected by complex processes, which by their very nature present higher risk levels. It is important to point out that even though there were more injuries recorded in absolute terms, the severity index marks a slight decrease in comparison to the same value last year.

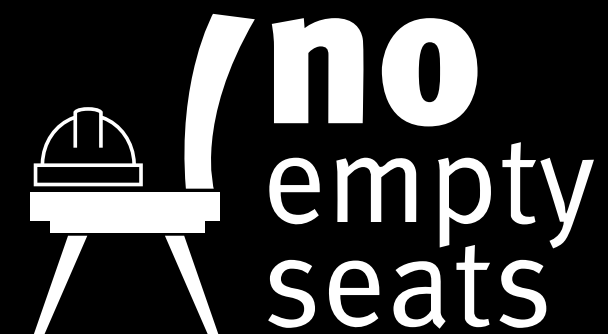


No empty seats – safety awareness campaign at the Cross River Rail worksite

The **safety** of employees and collaborators is our absolute priority. In 2021, our **Cross River Rail** worksite in Australia conducted an **awareness campaign** called "**No empty seats**" which was awarded the prize for **best communication** on safety at the Australian **National Safety Awards of Excellence**.

The flagship element of the campaign is a **video** featuring Dallas Adams, a shift electrician at the Roma Street worksite and a third generation tunneller who tragically lost his father and brother in work accidents, now active in creating awareness on the topic.

The video focuses on the **pre-Christmas period** when 25% of mortal accidents happen, according to a WorkSafe Queensland study. Adam tells the story of his personal experience and refers to the empty seats at the table on Christmas day to describe the great emptiness left by workers who had passed, thereby creating awareness among co-workers to protect their loved ones and to **never let one's guard down** during worksite operations.



2019 ²³	Hours worked	LTI ²⁴	MTC ²⁵ + RWC ²⁶	Recordable occupational injuries	Severe injuries	Severe injury rate ²⁷
Employees	14.193.891	69	11	80	2	0,14
Subcontractors	6.897.833	28	11	39	0	0

2020	Hours worked	LTI	MTC + RWC	Recordable occupational injuries	Severe injuries	Severe injury rate
Employees	8.023.881	51	15	66	0	0
Subcontractors	7.639.363	19	18	37	1	0,13

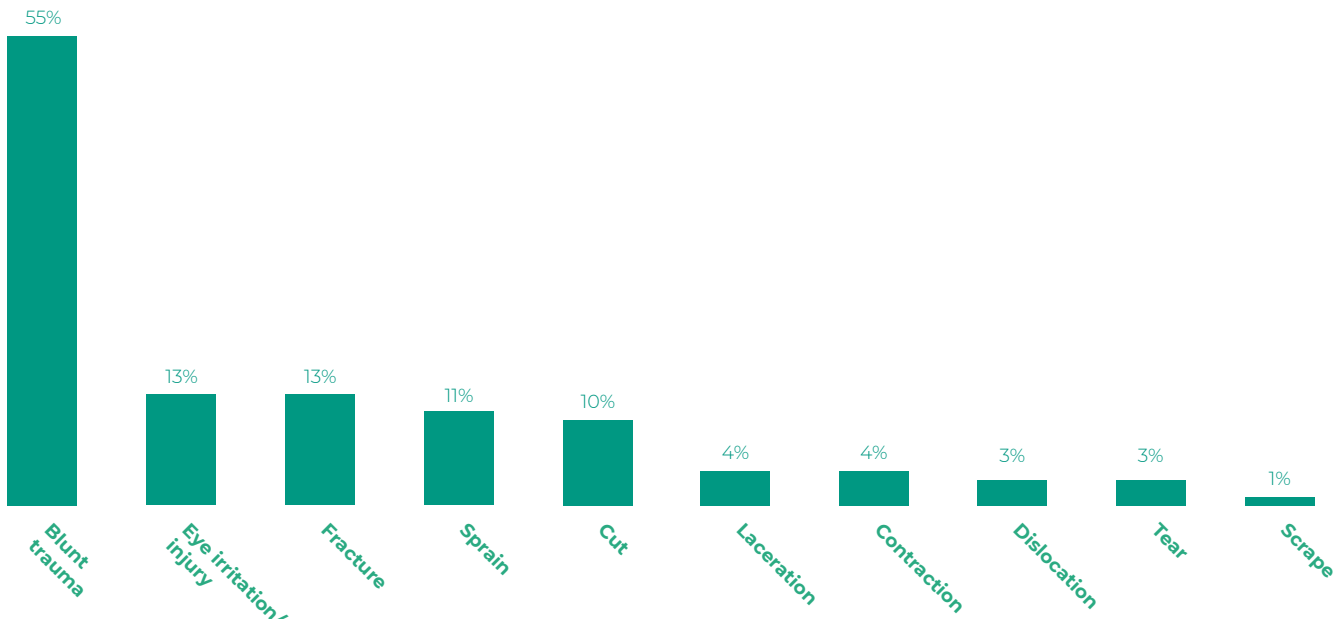
2021	Hours worked	LTI	MTC + RWC	Recordable occupational injuries	Severe injuries	Severe injury rate
Employees	7.376.436	32	22	54	1	0,14
Subcontractors	7.045.664	47	22	69	0	0

The only serious injury happened due to the operator's distraction as he was getting out of a vehicle. The event resulted in a broken lower limb. The analysis of the injury led to the identification of corrective actions that included a training cycle aimed at creating awareness among

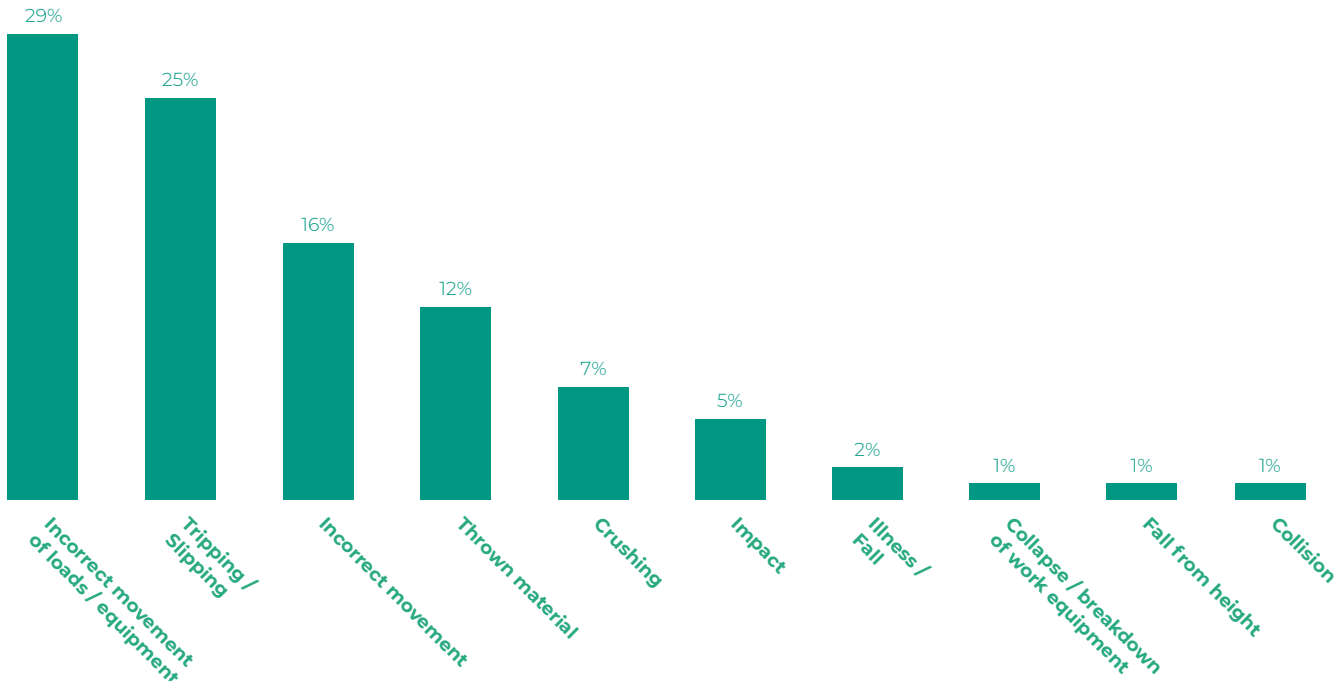
skilled workers on applying safety measures in general and specifically on the importance of always using the handle when getting down from vehicles and keeping the non-slip footboards clean.



As illustrated by the severity index, the analysis into the nature of the injuries, which includes subcontractors, shows how these are relatively insignificant episodes,



Harm caused by injuries in 2021



Injuries by cause in 2021

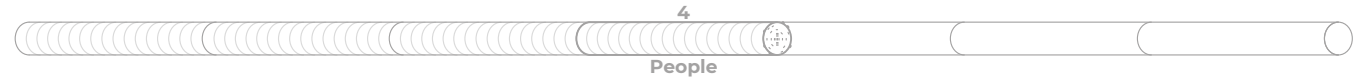
Given the nature of the company's business and based on the risk assessments carried out in the various Production Units, the work hazards that constitute a risk of serious work-related injury are mainly physical and related to the organisation of the work. The most frequent causes may be incorrect handling of loads and use of tools, in addition to tripping and slipping.

We have recorded a low number of high-consequence work-related injuries thanks to the prevention, **protection and improvement initiatives** put in place, such as continuous training and awareness campaigns to increase workers' engagement, incentives and awards, specific safety procedures, Behaviour Based Safety programmes

for the most part. The harm to workers is mostly due to contusions, as detailed below:

and Fatigue management, verification and guided support on the correct behaviour to be implemented and choice of the most advanced individual and collective protective equipment. **Monitoring** of the proactive and predictive performance indicators and the result of the risk assessments allow us to carry out targeted controls by focusing our attention on the most sensitive areas.

Our commitment to the **continuous improvement** of the company's Safety performance is expressed through specific actions and targets contained in our **corporate Sustainability Plan**, in particular in objective 3: "Ensure continuous improvement of occupational Health and Safety performance".



Mental health in the work site - Update on the activities of Mates in Construction NZ

Mental health in the workplace continues to be a priority at our **Central Interceptor** worksite in New Zealand, through the work with **Mates in Construction NZ (MIC)**. The JV is a founding member of this organisation in charge of supplying all workers in the worksite with a training period and constant means of aiding anyone in need.

In 2021, the programme introduced a training activity for **"Connectors"**, volunteers who support the MIC team. Connectors are **people** with the task of guaranteeing the safety of people who may find themselves in a moment of difficulty, while they are being put in contact with professional help.

To date about **2,000 people** have received the basic training (**General Awareness Training**), **75 Connectors** have been trained and 5 people have received a training course on what to do in case of attempted suicide (**Applied Suicide Intervention Skills Training**).



New Zealand, Auckland
Central Interceptor

Vaccination hub at the Brennero worksite in Italy

2021 was a critical year for the **anti-Covid-19 vaccination** campaign in Italy and across the globe. At the **Brennero** worksite we wanted to help speed up this important process as much as possible by setting up a **vaccination hub at our base camp**, within the campaign promoted by the **healthcare authorities of Alto Adige**.

During the months of July and August two vaccination sessions were held at the hub, involving **160 people**, who were given full vaccination cycles.

The administration of vaccinations was managed by the **local health authority** while **BTC**, our JV, coordinated and provided **logistic support** for a successful campaign.

Isarco Scarl, the contractor of the adjacent lot, also partook in the initiative with the involvement of unions. In fact, the employees of that lot were given access to the vaccination hub to promote **collaboration** and **optimise resources**, and achieve a shared social objective.



New Zealand, Auckland
Central Interceptor

Local communities

We build public works that generate **long-term local benefits** by enhancing **services** to citizens and increasing the **productivity** and **competitiveness** of the **area**. The **environment** also benefits, 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 presence in the area feeds the **economic activities** through the creation of **jobs** in the worksite and along the supply chain. The international nature of our company also involves the **transfer of know-how** between the various regions of the world where we operate and the subsequent **professional growth** of the highly specialised local workforce.

However, we are aware that the construction phase can cause **inconveniences** and disruptions for the communities in the immediate proximity of the worksites, 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 metro lines, there may be additional inconveniences associated with the **traffic** of construction vehicles and supplies, and the transport of excavated materials through city streets.

For this reason, our worksites **engage with local stakeholders** from the earliest stages of construction with the aim of **informing** and **consulting** them, 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 worksites.

Mitigation measures include the installation of noise barriers. At some worksites, for example, the conveyor belts for excavation materials have been designed with outdoor roofing, to minimise the noise generated by the continuous movement.

Compensatory measures may include direct contributions, with a view, for example, to installing special windows or doors to dampen noise, or indirect contributions, in the form

of donations and sponsorships of initiatives for the benefit of the entire community.

For example, the Central Interceptor worksite recently finished building a play area for children in the Miranda reserve, where one of the sites for the project is located, to replace the one that was demolished to set up the worksite. On this occasion, local residents were involved in the design of the space, which includes murals by a local artist.

In addition, during a year that was affected by measures to prevent the spread of the coronavirus, the challenge of working remotely in the area surrounding the worksite was recognised. To thank local residents for their patience, the GAJV sent them Christmas hampers during the festivities.

Some initiatives of stakeholder involvement are managed directly by our Customers with the help of the worksite personnel. This is the case of **visitor centres** for schools and private citizens, which feature information about the various stages of construction and excavation, and often offer the possibility of arranging organised tours of the worksites.

Our client BBT, of the Italian Brennero project, 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 Tunnel²⁸. The body aims to create an **interface** between the project and the District Communities of the Eisack Valley and the Upper Eisack Valley. 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 presents the technical issues related to the excavation, but also the nature and culture aspects of the project. Also, as of the summer of 2021, the construction activities of the Brennero Base Tunnel project were displayed through evocative large-scale images in an exhibition space at the Innsbruck central station.

In New Zealand, the Ghella Abergeldie JV recently opened a **Discovery Centre** for the local community with its client Watercare. This fully mobile seven-metre long centre includes virtual and augmented reality experiences, and touch screen games, guided by an animated character called Wai Mā, a long-fin eel which is typical of New Zealand.

In Australia, the **Experience Centre** of the Cross River Rail project offers a very broad selection of services for the community. For example, the Centre manages information activities about archaeological findings discovered during excavations and offers free summer camps for children. In 2021, the Centre hosted the **STEM Girl Power Camp!** of the Queensland Department of Education, with the participation of 55 girls who got the chance to hear from female project engineers about their careers and the Cross River Rail project.

Our international footprint in 15 countries and 4 continents makes ensuring a seamless **integration** of our expatriate staff in the local context very important. It is an opportunity to enhance our unique corporate culture and promote mutual enrichment. 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 worksite personnel in new settings.

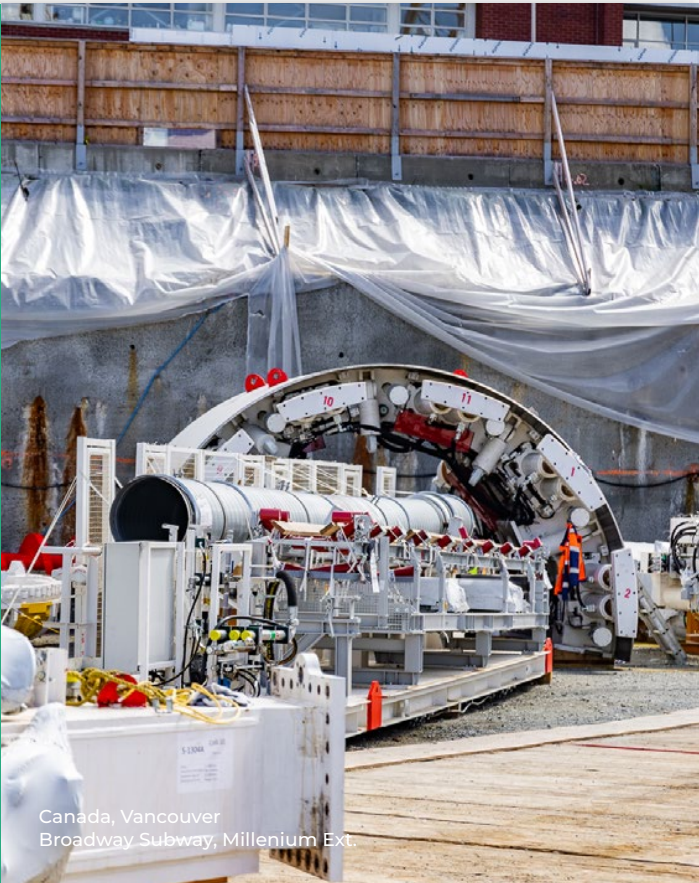
The involvement of the local communities in the Broadway Subway project of Vancouver

The communities that benefit from the infrastructure works that we help create are the ultimate recipients of our work- Hence, their involvement, from the very first stages of the project, is recognised by our clients as a crucial element for our success.

In 2021 there were numerous preliminary involvement activities in our project for the **Broadway Subway** line in Vancouver, Canada. An online **public consultation** was conducted between April and May in which the project team, in collaboration with the City of Vancouver, requested input on the **design of the stations**, including aspects inherent to the entrances, the yards next to the stations and other aspects of the structures on road level.

Also, in the month of July the second stage of a **contest for artists residing in Canada** was launched, to develop **works of art** to decorate the **stations** of Great Northern Way-Emily Carr, Mount Pleasant, Broadway-City Hall and South Granville.

Parallel to this, the Province of British Columbia, in collaboration with the Musqueam Indian Band, Squamish Nation and Tsleil-Waututh Nation communities, under the **Cultural Recognition Program**, selected three artists and a team for the creation of artistic installations of **indigenous art**. The works will be on display at the Arbutus, Oak-VGH and Great Northern Way-Emily Carr stations.



Canada, Vancouver
Broadway Subway, Millenium Ext.

The Laundry: a social enterprise at the Central Interceptor worksite in New Zealand

We believe that our worksites need to leave a **positive legacy** on the area where we operate, that lasts well past the construction stage. An example of this is "**The Laundry**", a social enterprise started in 2021 at the Māngere site of the Central Interceptor worksite in New Zealand. Our project JV, in collaboration with the local Mana Whenua hapū community (guardians of the Earth), started an **on-site laundry service for the PPE**, the personal protective equipment used on site. The business is managed by the **Te Ahi Waru**, the local tribe also known as hapū, with activities that include collection of the PPE from the various sites on the worksite, washing, mending, updating of the inventory and delivery. The service guarantees the washing of **120-260 sets of overalls** from seven different sites.

The **machinery** in the laundry room was purchased by the project JV, which also offered support through **consultancy on business management**, with the intention of transferring the entire business to the community at the end of the project so that they may continue it as an **independent business**. In addition, the project represents an **opportunity for unemployed youths**, who can gain experience and therefore integrate more easily into the work world thereafter.

The service also generates considerable benefits for the **health and safety of worksite personnel** and their families, thanks to the possibility of separating the washing of the PPE and therefore reducing the risk of **hazardous substances** contaminating household washing machines.



New Zealand, Auckland
Central Interceptor



Value

Key financial figures

REVENUE

€648_M

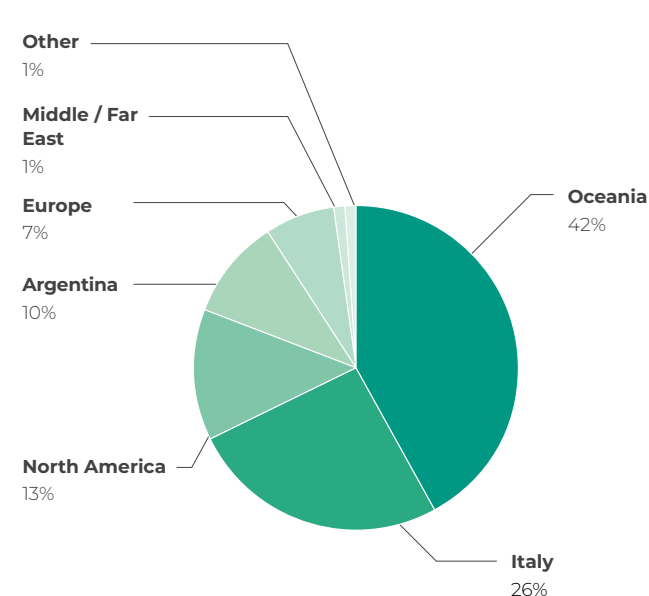
EBITDA

€76,4_M

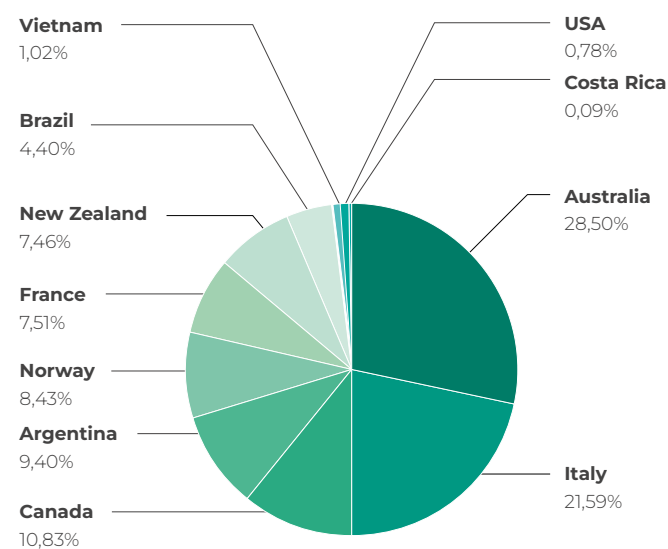
ECONOMIC VALUE GENERATED AND DISTRIBUTED

€632_M

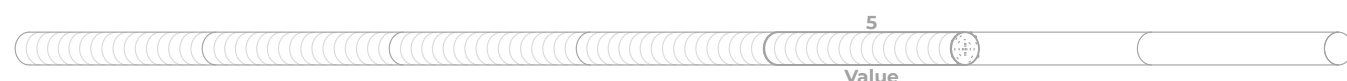
A breakdown of our 2021 revenue and order backlog by geographical area shows the international scope of our business, with more than 70% of revenue and roughly 66% of our order backlog developed abroad.



Revenue by geographical area

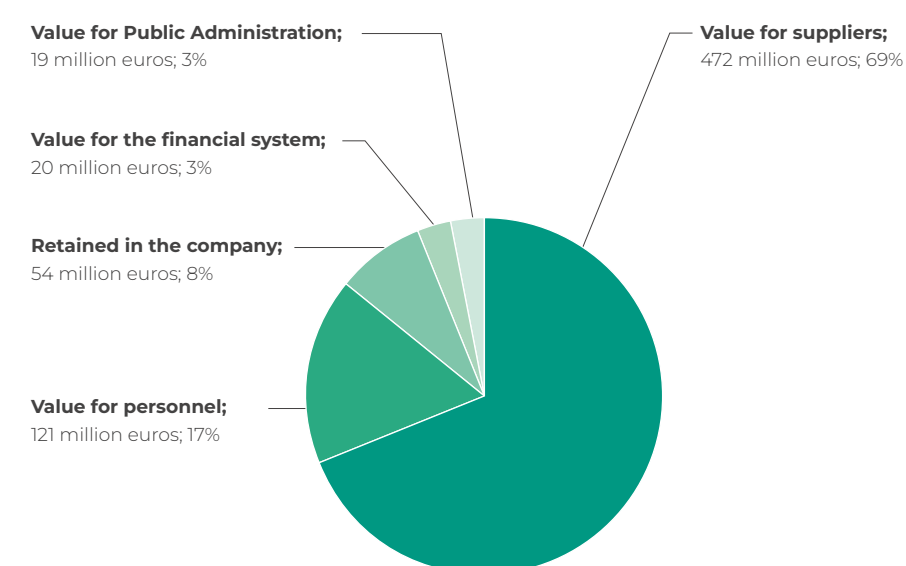


Order backlog by geographical area



Economic value generated and distributed

The generated and distributed economic value is calculated by reclassifying the income statement figures of the consolidated financial statements as at 31 December 2021. In 2021, the directly generated economic value amounts to 686.38 million euros and includes revenue and financial income. Most of this value (69%) is distributed to suppliers and includes the cost of purchasing services and raw materials. This is followed by the value distributed to personnel (17%), in the form of wages and benefits. The value distributed to the Financial system is 3% and includes financial expense, exchange losses and any distributed dividends. The public administration received 3% of the economic value generated in the form of income and other taxes and duties. The sum of investments in the community is about 200,000 euro²⁹. The Value held by the company is 8% of the directly generated total.



Distribution of generated economic value



Sustainability-Linked Loan by Unicredit

We believe that being sustainable represents a competitive advantage. In the last two years, Ghella has conducted various green loan operations. These require the reporting of **sustainable investments**, identified using the **European Taxonomy**, and achieving high performance for the sustainability indicators.

During the first months of 2022 Ghella obtained a **30 million euro Sustainability-Linked Loan** from Unicredit in support of the investment plan for 2022 and linked to the attainment of a **specific ESG improvement target** established upon signing the loan. The operation is linked to a quantified reduction of **CO_{2eq}** emissions that Ghella has committed to achieve **by 2025**, upon publishing the company's Sustainability Report.



Norway, Oslo
Photo by Fabio Barile from the photographic project "Di Roccia, Fuochi e Avventure Sotterranee"

“Meet the buyer” event at the Cross River Rail worksite in Australia– opportunity for local suppliers

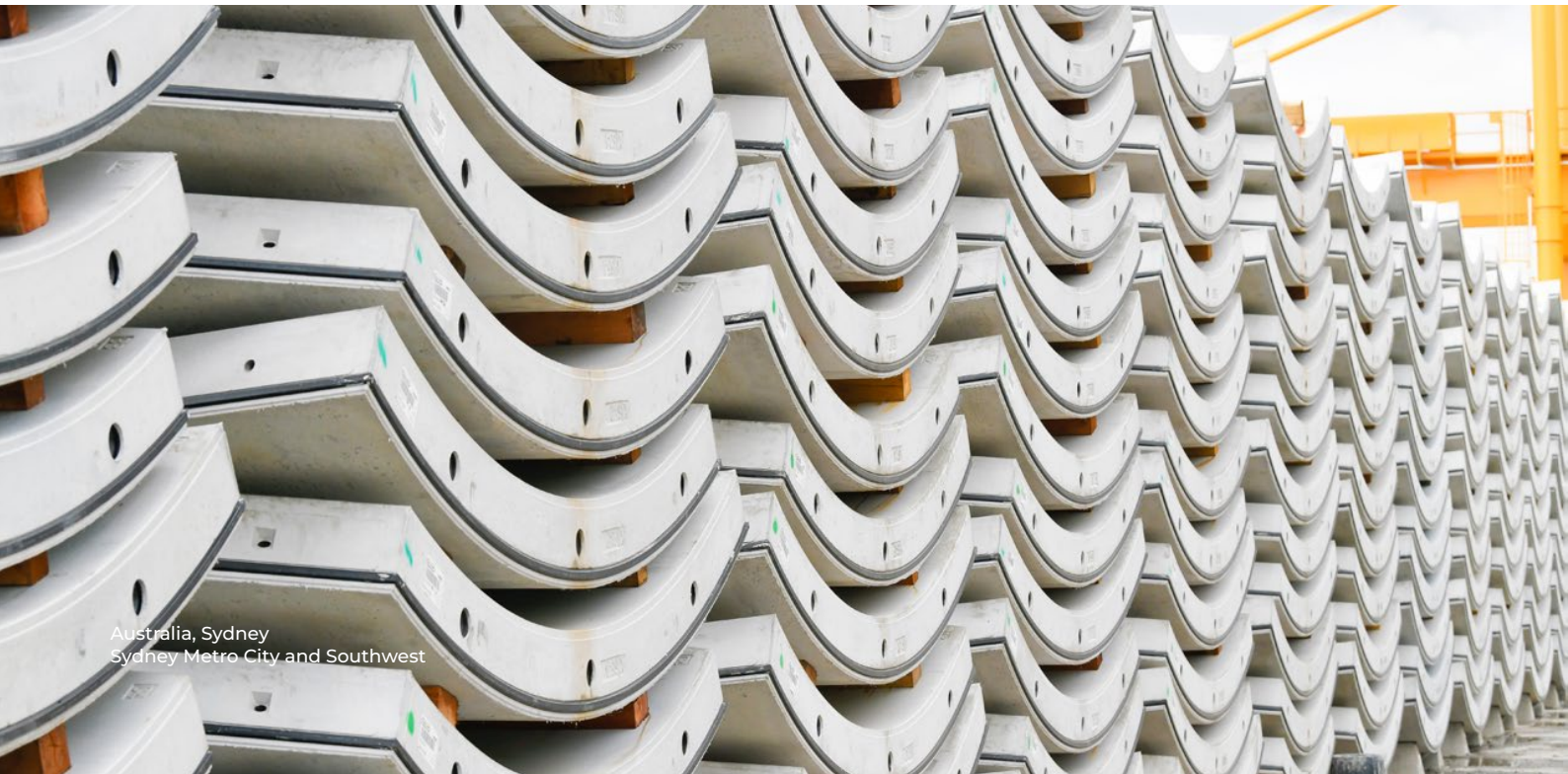
Our **Cross River Rail** worksite in Brisbane, Australia, represents one of the main employment incubators of Queensland and will boost **economic growth** and **local employment** for years to come.

It is estimated that during the construction phase alone the project will create **1,500 jobs per year** and **450 apprenticeships and internships** during the life cycle of the project.

During 2021, the project JV organised a **“Meet the buyer”** event at the Toowoomba site to give **local suppliers** the opportunity to collect information directly from the consortium on how they will be involved in the project or record their interest in working on future lots. The JV guarantees observance of the Procurement Policy of the Queensland Government, which places special emphasis on the use of local suppliers and maintaining **ethical work practices**.



Australia, Brisbane
Cross River Rail



Australia, Sydney
Sydney Metro City and Southwest

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** whose performance can significantly affect the efficiency, quality and sustainability of our own activities and construction projects.

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

We have set up a **Sustainable Procurement Policy** that describes the principles that we apply in the management of the supply chain. Specifically:

- ethical procurement;
- support for the circular economy;
- assessment of the ecological footprint of construction materials;
- protection of the environment, including upstream of the value chains of our worksites;
- promotion of local purchases;
- compliance with working conditions standards for our workforce;
- respect for diversity within our workforce;
- engagement of suppliers and subcontractors in our sustainability journey.

In addition, we share our policies and guidelines with our suppliers and we ask them to work in observance of what is declared in them, in order

to guarantee a unified and coherent approach throughout the entire value chain.

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.

The path taken with the SA8000 certification, places us in an increasingly synergetic relationship with our suppliers, in view of a mutual drive to continuously improve. We apply the same diligence as our suppliers in verifying conformity to the Standard.

QUALIFICATION AND MONITORING OF SUPPLIERS

The qualification of a new supplier, previously identified during a market survey (“scouting”), begins with the request to register on our **Ghella Vendor list** platform, where the supplier fills in the qualification questionnaire. Successful suppliers are included in Ghella’s **List of Vendors**. In projects that adopt the qualification system of a partner, we check that its qualification criteria are aligned with those included in our questionnaire.

In 2021, more than 2,700 suppliers were handled. 97% of them are local, meaning that their company name is registered in the same country where the contract is being carried out, and 97% of the overall spend is allocated to them. This is an expression of our attention to local suppliers, with a view to generate a mutual benefit. More than 600 suppliers signed contracts for the first time in the reporting year. On average, for all of the units included in the reporting scope, about 47% was assessed according to criteria of quality, safety and environment. 42% was also assessed based on social criteria. In Australia and Canada 100% of the main suppliers were assessed according to social and environmental criteria. None of our suppliers come from geographical areas that are at risk for human and children’s rights. When environmental criteria were not included in the qualification

process, they were introduced into the supplier monitoring process during the execution of the contract.

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: our intention is to gradually engage suppliers in our sustainability journey, working as a team and following shared rules.

In order to ensure that the supply chain is consistent with our values and objectives, we have introduced the following measures:

- including our principles and guidelines on environmental and social sustainability in purchase orders and contracts;
- periodically monitoring supplier performance, including aspects of environmental, social and economic sustainability;
- organising sample audits of suppliers, to check whether the qualification requirements are actually met, and of the procurement departments of our own worksites, in order to verify that the qualification and monitoring processes are conducted in line with our corporate procedures;
- training our buyers, both in our

headquarters and on site, about sustainability criteria introduced at Corporate level;

- involving suppliers in corporate sustainability projects.

If suppliers who have had criticalities found during periodic audits and monitoring do not intend to implement the mitigation actions required within the established terms, they are removed from our register.



Innovation

We constantly test ourselves when we face engineering challenges and look for solutions that allow us to carry out work safely, monitoring technical decisions by pre-empting problems and promoting the transfer of know-how.

Excellence in the development of construction projects is a distinctive trait that positions us in our reference market for our in-depth specialisation. The ongoing search for innovative construction solutions and our specialised expertise place 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 worksites, where new solutions are tested on a daily basis to achieve the best results. In 2021 we continue to endeavour:

- to conduct applied research and validation of new technologies, materials and concepts, and the filing and management of patents;
- to create and develop improvements, in conjunction with the world's major TBM manufacturers, reusing, where possible, materials and regenerated equipment.

Our main innovations include:

- Traffic protection shield: this shield allows us to work on a tunnel without disrupting traffic flows to the considerable benefit of both the motorway users and operators. It is an actual "counter tunnel" that separates the worksite from the motorway lanes, significantly increasing safety levels.
- Automatic rib: a Ghella patent to install a rib in a tunnel without using personnel on the excavation face which means greater safety conditions.

Other applications of innovative technological solutions include:

- New electric traction technologies: since 2020 the Central Interceptor worksite uses electric locomotives. This innovation will reduce greenhouse gas emissions and improve the air quality inside the tunnel. It will also reduce energy consumption of the primary fans

and the risk of fire in the tunnel, as diesel locomotives are the primary source of this risk;

- Anchored Gasket: segment gasket anchored in the cast concrete. It minimises the costs and use of labour and increases quality. This innovation has been used since 2021 in the Central Interceptor, Cross River Rail and Brenner worksites;
- Compact launch structure: this method launches the TBM quicker and into tighter spaces, where the traditional way to assemble a few segments would reduce the manoeuvring space. In addition, avoiding the use of these segments eliminates the safety risks associated with their subsequent demolition. The structure, used in 2021 at the Central Interceptor worksite, made it possible to launch the TBM in full safety and without any water infiltration.

Sponsoring the research for cement free mixtures in tunnels

We are aware of the fundamental role that **research and innovation** have towards improving **environmental performance** of the works that we build. For this reason, we sponsor various university research projects, in view of a mutual exchange, where we provide not only resources but an immediate application environment for the identified solutions. In 2021, we started a collaboration with GEEG (Geotechnical & Environmental Engineering Group), a spin-off of La Sapienza University of Rome, to study an **alternative** cement free mixture to be used to fill the ring space between the tunnel excavated surface and the external surface of the pre-fabricated segments that line it. The research project led to the creation of a mixture that has the same mechanical characteristics as cement, but is produced with a **blast furnace cement waste**, called **slug**. The reduced emissions associated with the production of the mixture, due to the absence of cement, and the reuse of the waste of another process, make this solution an excellent example of **circular economy**. The new mixture will be used in 2023 for the **Oslo E6 Clean Water Tunnel project**, providing a drastic reduction in **scope 3 emissions** associated with more than **60,000 m³** of **mixture**.

Australia, Sydney
Photo by Alessandro Imbriaco from the photographic project "Di Roccia, Fuochi e Avventure Sotterranee"

Profile



MASSIMO MAFFUCCI
Tunnel Division Manager,
Rome

How long have you been at Ghella and what has been your journey to date?

This year I am celebrating 20 years at Ghella. I was initially hired as the Site Engineer for the Valencia Subway in Venezuela. Following that, I took part in the railway project of Puerto Cabello-Las Encrucijadas, first as Senior Project Engineer and then as the Construction Manager. After six years in Venezuela I moved to the Dominican Republic, to the worksite for the Higeuy and Bavaro public water supply, as the Project Manager. In the same role, I also worked in Brazil, at the Gastau gas line. In 2011, I went back to Rome, to the Tunnel Division at the Headquarters, which represents our core business. In 2015, I was appointed executive and since then I have had the chance to follow worksites in Canada, Norway, Australia and New Zealand.

Can you briefly describe your role?

I follow our worksites abroad through weekly meetings with management and periodic visits. The objective is to collect information on the planning and execution of the works in observance of the contract budget and schedule. For some contracts I actively participate in the tender team, which means developing the project, the budget, the method and the work schedule that we will follow if our bid wins. My role allows me to help transfer the experience and know-how of our business from one worksite to another across the globe, utilising the lessons learnt and ESG best practices.

You partook in the process of defining the company's new targets for 2030. What do you think the added value is for the organisation to have set quantitative commitments?

I took part in the process with enthusiasm. Since I was lucky enough to partake in some bids and oversee worksites in Australia and New Zealand, the sustainability culture was already part of my training. The far-sighted Clients that we collaborated with in those countries had already set similar targets, that we could use as a reference point for this corporate work. Currently, it is not possible to build a future without defining sustainability objectives,

otherwise we would simply be excluded from certain geographical areas. Our global presence requires us to adopt the same strategy also in countries that are less advanced on these themes.

How do you think your work can help improve Ghella's sustainability performance?

My department can significantly help improve the sustainability performance of our business. The effort is even more effective if it begins at the tender stage, so that it continues after the bid is won, in the setting-up stage of the worksite. For example, four years ago we started using electric vehicles in the tunnels, and this has now become standard practice for us; we use cement free materials or mixtures with less than 55% cement components, through the use in our concrete of blast furnace slug that guarantees the same performance; we use the Push Frame Methodology, a system that makes it possible to start the TBM in very tight spaces and therefore build less rings, considerably saving CO₂, and avoiding subsequent disposal.



Donations, sponsorships and association memberships

We are aware of our social responsibility and have adopted a **Sponsorship** and **Donation Plan** to support initiatives that reflect our values. Our commitment takes **three forms**:



DONATIONS



SPONSORSHIPS



SOCIAL INVESTMENTS

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



Social, i.e. support for organisations that carry out **assistance and solidarity activities**, and associated employee awareness raising on the causes supported by the company. These include donations to the **Lazzaro Spallanzani National Institute for Infectious Diseases** and the **Comunità di Sant'Egidio**.



Education and Instruction, investing in **undergraduate and specialist degree courses** and master's courses, in order to transmit **our passion and expertise to future generations**; for example, we sponsored the Master for Business Engineers of Dirextra Business School and the level II Master in "Tunnelling and Tunnel Boring Machines" of the Turin Polytechnic.



Sustainable communication, to promote our Mission and Vision through our stakeholders.



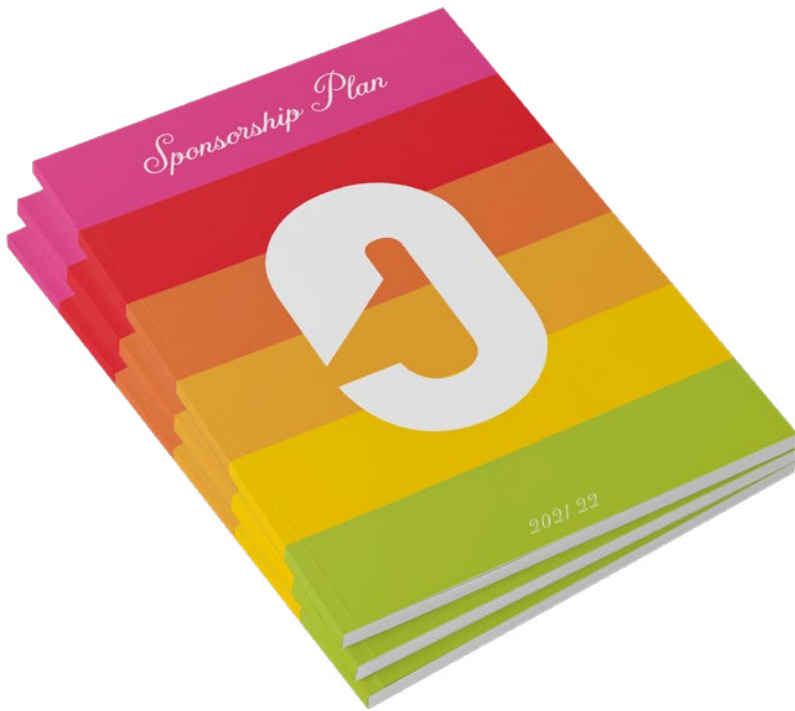
Culture, by promoting **cultural excellence** in Italy and in the world, such as through donations to the **Accademia di Santa Cecilia** in Rome.



Art, since at Ghella we believe that **freedom of expression** helps us to free our imaginations and avoid prejudice, we support the creation of works of art. Following the successful editorial project **Di roccia, fuochi e avventure sotterranee**, published by Quodlibet and documenting a series of photographic surveys conducted in the worksites of Athens, Oslo, Hanoi, Sydney and Brennero, a photo exhibition of the same name was held at **MAXXI**, National Museum of 21st Century Arts, curated by Alessandro Dandini de Sylva.



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



Consistently with our sponsorship and donation policy, we **actively support associations** with which we share ideals and goals. We are long-time members of the **Società Italiana Gallerie** (SIG, Italian Tunnelling Association), an association that for over 40 years has been involved in the promotion, coordination and dissemination of studies and research in the field of tunnel construction and large underground works. We are members of **ANCE**, the Associazione Nazionale Costruttori Edili (National Constructors Association), for which **Federico Ghella**, our Deputy Chairman, holds the role of **Deputy Chairman** and **Chairman of the committee for works abroad**.

Since 2019, we have been members of the **Green Building Council Italia**, which promotes the spread of a culture of sustainable construction. In 2021, we became members of **Sustainable Infrastructures Association (AIS)**, a technical-scientific association founded in Italy in 2020 with the aim of promoting a broad and qualified culture of sustainability and increasing awareness of the social and economic value to avail of sustainable infrastructures. In 2021, our New Zealand subsidiary Ghella Pty Ltd became a member of **Infrastructure Sustainability Council (ISC)**, the association that manages the main sustainability rating for infrastructures used in Australia and New Zealand.



Italy, Rome
MAXXI exhibition "Di Roccia, Fuochi e Avventure Sotterranee"



Ghella for Rome

EXHIBITION "DI ROCCIA, FUOCHI E AVVENTURE SOTTERRANEE"

The photographic campaigns commissioned by Ghella are inserted in a traditional chronology of documentation of large-scale engineering projects and represent a series of creative explorations of tunnelling.

Di roccia, fuochi e avventure sotterranee, curated by **Alessandro Dandini de Sylva**, is a collection of **120 images**, taken **between 2019 and 2020** at five worksites and on three continents, initially shared as an editorial project (Quodlibet) and then leading to two exhibitions, one held from 22 September to 14 November 2021 at **MAXXI** - National Museum of 21st Century Arts in **Rome** - and the second from 12 March to 5 June 2022 at **MAXXI L'Aquila**.

Running it are five of the most interesting authors of Italian photography today. **Fabio Barile** (Barletta, 1980) worked on the railway tunnel that will connect Oslo to Ski, juxtaposing images of natural and artificial systems; **Andrea Botto** (Rapallo, 1973) on the other hand, worked in the tunnel under the Brennero pass, joining Italy and Austria, documenting the activity of the worksite through the explosions of the excavation front. **Marina Caneve** (Belluno, 1988) was in charge of the relationship between city, contemporary planning and historical memory at the subway line that will connect the airport of Athens to Piraeus Harbour; **Alessandro Imbriaco** (Salerno, 1980) shot details inside the enormous tunnel boring machines used for the tunnels that run under Sydney bay. Finally, **Francesco Neri** (Faenza, 1982) was in charge of Hanoi's first underground subway, representing the worksite as a zone of conflict and challenge in the face of the chaotic, unexpected and organic environments of the city. **A selection of the works from the exhibition will become part of the MAXXI Photo Collection** de facto becoming state assets.

MAXXI LEGENDARY TICKETS

For the **Di roccia, fuochi e avventure sotterranee** exhibition, Ghella **gifted** all of the employees at the Rome headquarters of **two MAXXI Legendary Tickets**: single entry valid for the next one hundred years, **until 2121**. All is needed is to find a couple of free hours over the next century.



Italy, Rome
MAXXI exhibition "Di Roccia, Fuochi e Avventure Sotterranee"

Ghella worldwide

SOLID SUPPORT TO OUR COMMUNITY

In a difficult time for Italy, Ghella has supported the people who were in the front line fighting the Coronavirus. This is why, in 2020, **we donated €100,000 to the Lazzaro Spallanzani National Institute for Infectious Diseases**, the Rome-based hospital which was the first to isolate the virus and has treated thousands of Covid-19 patients since the outbreak of the pandemic.

The same amount, in support of research, **was donated again in 2021**.

GHELLA SUPPORTS THE XXXV INTERNATIONAL MEETING FOR PEACE

In keeping with the company's values of cooperation between individuals and the idea of **leaving a better world for future generations**, Ghella supported the **XXXV International Meeting for Peace**, organised by the **Community of Sant'Egidio** and held in Rome from the 6th to the 7th **October 2021**.

The event, focusing on the central theme of **"Peoples as Brothers, Future Earth"**, concluded with a ceremony at the Colosseum on the afternoon of 7th October, with the participation of the leaders of the Christian churches and of the great religions, along with high figures of international politics and culture. A solemn moment of reflection, prayer and coming together, a **message of hope for the future in the name of peace**. A particularly important message in this historical period, ravaged by war conflicts near the heart of Europe.





Greece, Athens
Photo by Marina Caneve from the photographic project "Di Roccia, Fuochi e Avventure Sotterranee"

Environment

For us, protecting the environment is a priority and as such, it is the subject of both the Policy for the Environment and the Sustainability Policy. This year we strengthened our commitment further by defining new ESG targets and setting the ambition of becoming Carbon neutral by 2050.

We recognise the very delicate role that we cover because of the context we operate in and the nature of the works that we execute. This is why we operate according to high sustainability standards, with the aim of reducing the **environmental footprint** connected to the works as much as possible, taking care to preserve the wealth of the local ecosystems and recognising our role as significant contributors in reducing Climate Change. Proper management of environmental issues has always been at the centre of our modus operandi and is formalised 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, right from the planning stage, all our worksites carry out an assessment of the **significant environmental aspects**, i.e. all elements of our activities that interact with the environment and that can generate impacts on it, both in normal operating conditions and in potential emergencies. Below are the environmental aspects that are typically significant to our projects, that we keep under control because they may generate direct impacts on the local area:



Atmospheric emissions / particulate



Management of waste and hazardous substances



Water resource management



Noise and vibrations



Soil and subsoil management



Vehicular traffic



Biodiversity



Management of historical, architectural and archaeological heritage



Consumption of natural resources and raw materials



Energy consumption



GHG emissions (scope 1 and 2)

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

Planning the management of environmental aspects as part of Project Plans takes into account **local legislation**, **contractual requirements**, and **objectives and targets** set by the client for the works. Our company Sustainability Policies and Plan ensure the commitment to meet the needs and expectations of all stakeholders in each project, to adopt the **same sustainability standards** globally and the continuous improvement of our **environmental performance** over time.

During the **construction** stage of the works, our

teams perform an operational check and continuous monitoring of the significant environmental aspects. 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.

On a Corporate level, this flow of information allows us to monitor the organisation's environmental performance and set up suitable plans of action to pursue continuous improvement.

The **results** achieved with our Projects for **2021** are described in the paragraphs below and compared with the information provided in the two previous years. It is worth noting that these representations are based on different reporting scopes.



Profile



SANDRA EDWARDS
Social Responsibility Manager,
Central Interceptor, NZ

What is your career path and what brought you to Central Interceptor?

With a lifelong passion for travel, I joined the Royal New Zealand Navy as a Navigation Officer straight out of high school. My time was spent mostly sailing around New Zealand or the South China Sea and completing my Bachelor Studies. I then moved to Auckland Council as a Compliance Officer as I was not interested in the warfare studies which was the next step in my career. During my time at Council, I had most enjoyed working with earthworks and large-scale infrastructure projects so decided to get into construction. I worked for two of New Zealand's top tier construction companies, Downer NZ and Fletcher Construction. Initially as a Health, Safety and Environment Advisor, then progressing to the National Environmental and Sustainability Manager for Fletcher Construction Infrastructure Division. I was keen to get back into project work and jumped at the chance to join the Central Interceptor international Joint Venture as the Environmental Manager initially then with a promotion to Social Responsibility Manager.

Can you briefly describe your role and what it entails on a day-to-day basis?

As the Social Responsibility Manager, I lead the Stakeholder/Communications, Environment and Sustainability Teams so no two days are the same. One day I could be reviewing steel and concrete usage to feed into our carbon data and the next I could be discussing noise and vibration monitoring results with an interested stakeholder. We also work hard to engage with mana whenua (local indigenous people) and support our client with their partnership relationship with them. We have Cultural Monitors during topsoil stripping, keep them up to date with progress on the project and look for opportunities to provide useful resources such as trees for carving or flax for weaving.

What challenges in your opinion are faced by women in construction?

Working in construction can be difficult for anyone with any outside of work responsibilities. With the early starts and long hours, it is important to have a support network around you. I am fortunate to have a very supportive husband and parents to help manage our family to get the children to school and football practice etc. I am always astounded by the single parents and expats who manage on their own.

What is the most stimulating aspect of the job?

The people who make up our Joint Venture whānau (family) are amazing – with such diverse backgrounds and experience. There is a māori whakatauhākī (proverb) that is widely used in New Zealand because it is so true: it says:

*Kī mai ki ahau 'He aha te mea nui o te ao?'
If I was asked 'What is the most important thing in the world?'*

*Māku e kī atu 'He tāngata! He tāngata! He tāngata!
It is the people! It is the people! It is the people!*

*Meri Ngaroto, early 19th Century
Te Aupouri wāhine rangatira
(female chief)*



Australia, Sydney
M6

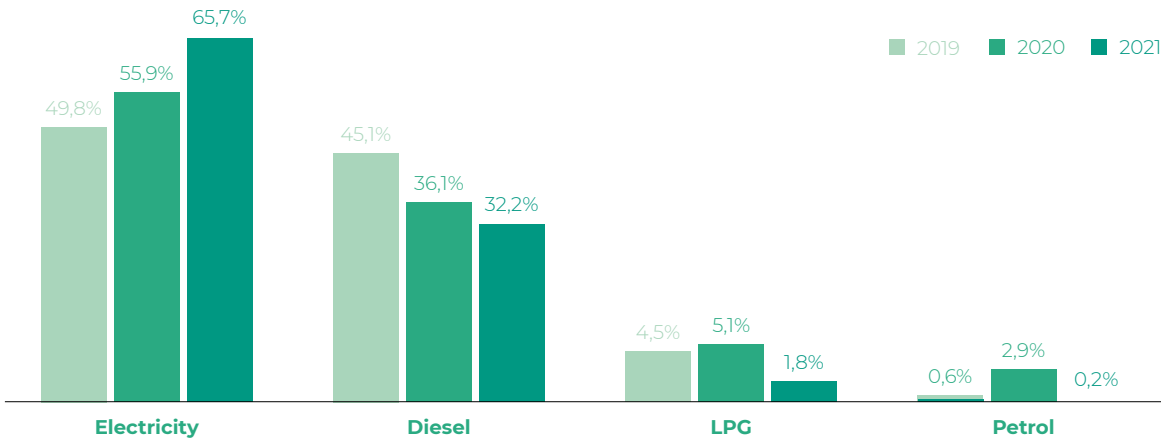
Energy consumption and greenhouse gas emissions

In our Environment Policy we aim to reduce the consumption of energy and minimise greenhouse gas emissions. Construction work and on-site operating activities involve the consumption of energy resources that we constantly monitor. This consumption is attributable to activities carried out by both Joint Ventures and subcontractors working on-site.

In 2021, the overall energy consumption at our worksites was **696,311 GJ**, recording a 6% drop compared to last year and 36% compared to 2019, as shown in the table.

Consumption	unit	2019	2020	2021
Natural gas	GJ	0	2	0
Petrol	GJ	6.673	21.714	1.674
LPG	GJ	48.772	37.929	12.554
Diesel	GJ	491.805	267.987	224.320
Electricity	GJ	543.011	415.146	457.762
Total	GJ	1.090.261	742.778	696.311

Below is the division by energy sources in the last three reporting periods:



Energy consumption by source for 2019, 2020 and 2021



The primary source of procured energy is still electricity, which is 65.7% of the total, about 10% more than last year. It is especially used for the operation of worksite machinery and TBMs, where applicable, as well as auxiliary activities in the offices and base camps. Of the employed fuels:



Diesel

Is the second most procured source and nevertheless down 16% compared to 2020. It can be used for the operation of generators and worksite machinery and for the car fleet;



LPG

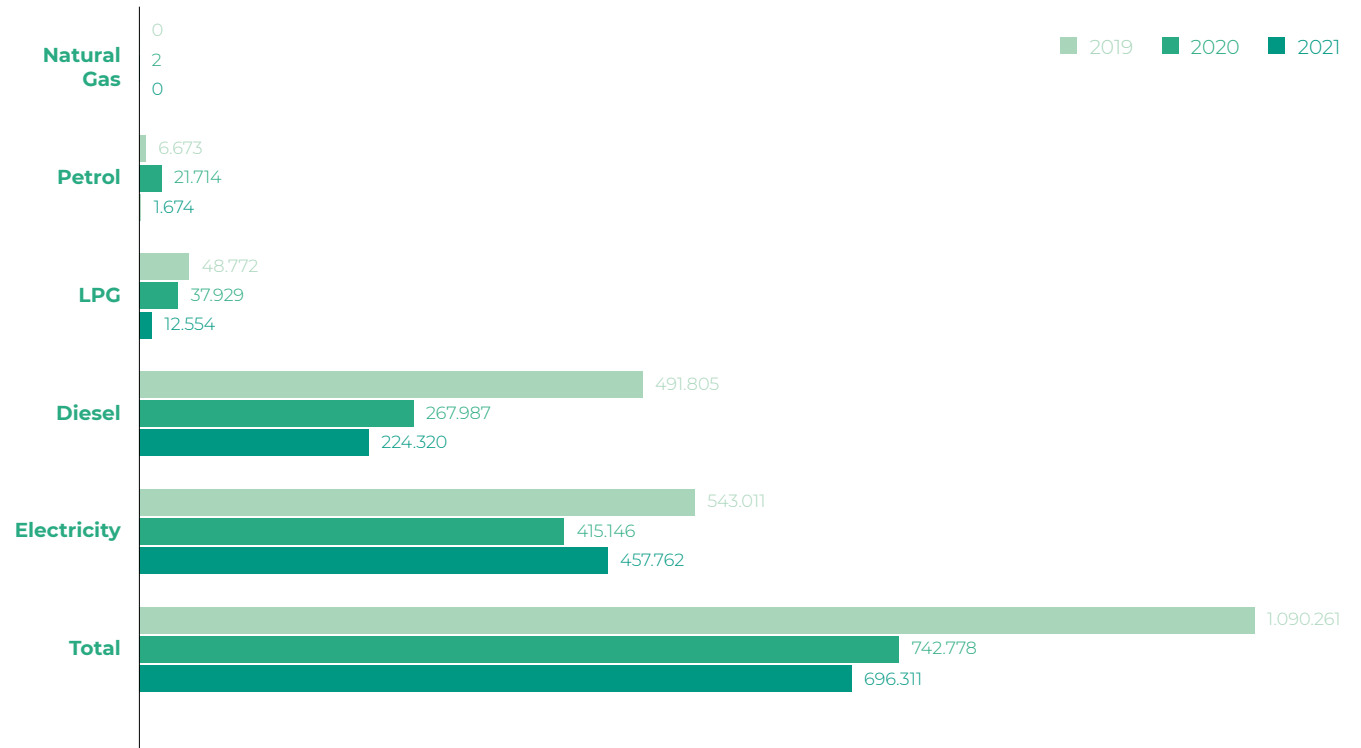
Can be used to produce steam, for heating and domestic hot water in offices and base camps and for the canteen service. It is down by about 67%;



Petrol

Is used as fuel for the car fleet and for construction vehicles. In 2021, it supplied a mere 0.2% of the overall consumption.

In 2021 we recorded again a drop in all supplied fossil fuels, in keeping with our objective to reduce direct greenhouse gas emissions, stated also in the Sustainability Plan 2019-2022.



Energy consumption by source in 2019, 2020 and 2021

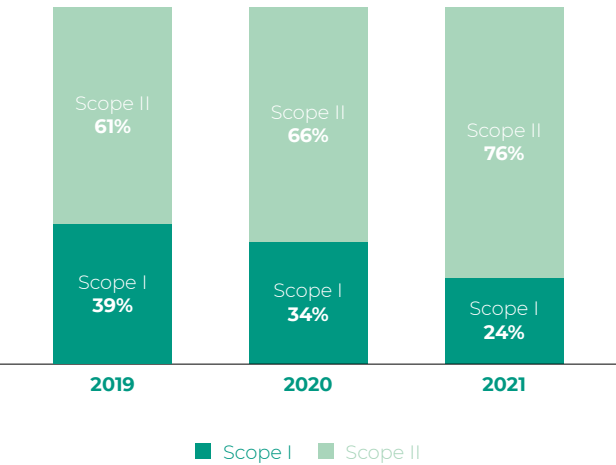
Worksites included in the 2020 reporting scope, with the exception of Cross River Rail recorded a drop in energy intensity. This is 0.08 GJ per hour worked in 2021, down about 8% compared to last year.

In addition to monitoring our energy consumption, we track greenhouse gas emissions associated to it, differentiating between those generated directly by the on-site production of energy through the combustion of diesel, LPG and petrol (Scope 1 emissions) and those related to the

purchase of electricity from the grid (Scope 2 emissions), generated upstream at the power stations and that we are indirectly responsible for. The calculation method for scope 2 emissions is location based, i.e. the emission factors adopted for the calculations strictly depend on the energy mix of the countries where consumption occurs.

In 2021, we emitted 72,600 tCO_{2eq} related to energy consumption. Below is the division of the scope 1 and 2 emissions of the last three reporting periods.

Emissions	unit	2019	2020	2021
Scope 1	tCO _{2eq}	40.225	23.966	17.717
Scope 2	tCO _{2eq}	63.569	45.650	54.883
Total	tCO _{2eq}	103.794	69.616	72.600



Division of scope 1 and 2 greenhouse gas emissions in 2019, 2020 and 2021 (% of the total)



Over the years, the share of scope 2 emissions is constantly rising, a clear sign of the current electrification process.

The information provided so far refers to the overall consumption of the worksite. If the criteria of financial

control is applied, i.e. we allocate emissions according to the percentage of shares in the JVs, the overall value becomes **25,846 tCO_{2eq}**, down 8.3% in comparison to 2020, when Ghella's scope 1 and 2 emissions were **28,183 tCO_{2eq}**.

Emissions	unit	2020	2021	Var. 2021/20
Total	tCO _{2eq}	69.616	72.600	4,3%
Ghella Share	tCO _{2eq}	28.183	25.846	-8,3%
Intensity	tCO _{2eq} /revenue	53,64	39,88	-25,6%

The table shows Ghella's share of GHG emissions normalised by revenue, i.e. per millions €

Some examples³⁰ of **energy saving** and emission **quantification** and **reduction initiatives** implemented up to 2021 are set out below:

- 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;
- installation of solar-powered lighting towers to replace diesel-fuelled hybrid lighting towers;
- use of electrical locomotives in tunnels instead of locomotives powered by the TBM's diesel generators;
- performance of LCA (life cycle assessment) studies to obtain the EPD (environmental product declarations) for some construction materials, quantifying the carbon footprint of their life cycles.

Electric trucks for spoil transport

In 2021, our Ghella Abergeldie JV, which is building the **Central Interceptor**, the longest waste water collector in New Zealand, was granted **a loan of 500,000 New Zealand dollars** from the **Low Emission Vehicles Contestable Fund**, a government program to accelerate the spread of electric vehicles in the country.

The loan allowed us to purchase **three electric trucks** and the associated charging infrastructure, dedicated to transport about **66,600 tonnes** of **spoil** material generated over the project life cycle. For every 100,000 km travelled, these trucks will allow savings of about 40,000 litres of diesel with a **79% reduction in CO_{2eq}** emissions compared to the diesel truck scenario. The project predicts overall savings of about **300 tCO_{2eq}**, equivalent to the annual emissions associated to the average energy consumption of **400 homes** in New Zealand.

In addition, electric trucks reduce **local** and **noise pollution**, and have **lower maintenance costs**.

This initiative will help achieve the **ISC** (Infrastructure Sustainability Council) rating requested by the Client Watercare, and will contribute to our **corporate target** of reducing **CO_{2eq}** emissions globally.



New Zealand, Auckland
Central Interceptor




Australia, Brisbane
Cross River Rail

Resource protection


We are aware that the materials and natural resources we use in our production activities, or with which we interact, are not unlimited and are of great value. This section describes our approach to water, biodiversity and materials resource management.

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. **Water withdrawals** at all our worksites take place in compliance with local authorisations, obtained for the extraction or the derivation of water from water bodies or public supplies. They are monitored and guided by resource saving principles, so to avoid any interference with the local water balance. The water **requirements** mainly fulfil TBM cooling, dust abatement, segment construction and other tunnelling works. In keeping with our Sustainability Policy, we implement, where appropriate, eco-design criteria aimed at water savings, from the design stage.




Reuse in tunnelling activities of water generated during the excavation phase, following treatment




Water recovery systems installed at the segment factory



Use of non-potable underground water for construction activities by storing it in on-site tanks fed by wells



Collection and recovery of rainwater through accumulation systems.



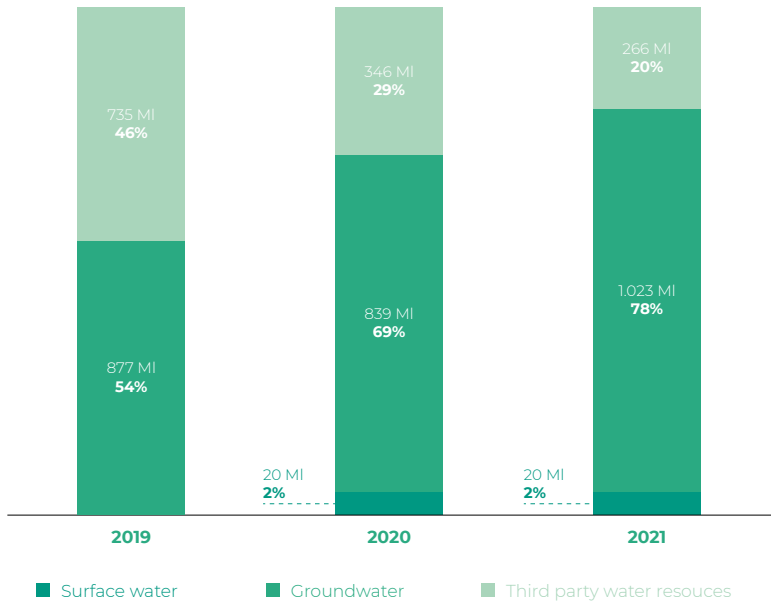
Closed loop recirculation line of the TBM cooling water

In 2021, we externally procured **1.310 MI** of water, 79% of which was non potable. Below is the division by source of supply for the last three reporting periods:

Source of supply	unit	2019	2020	2021
Surface water	MI	-	20	20
Groundwater	MI	877	839	1.023
Withdrawal from public water supply	MI	735	346	266
Totale	MI	1.612	1.204	1.310

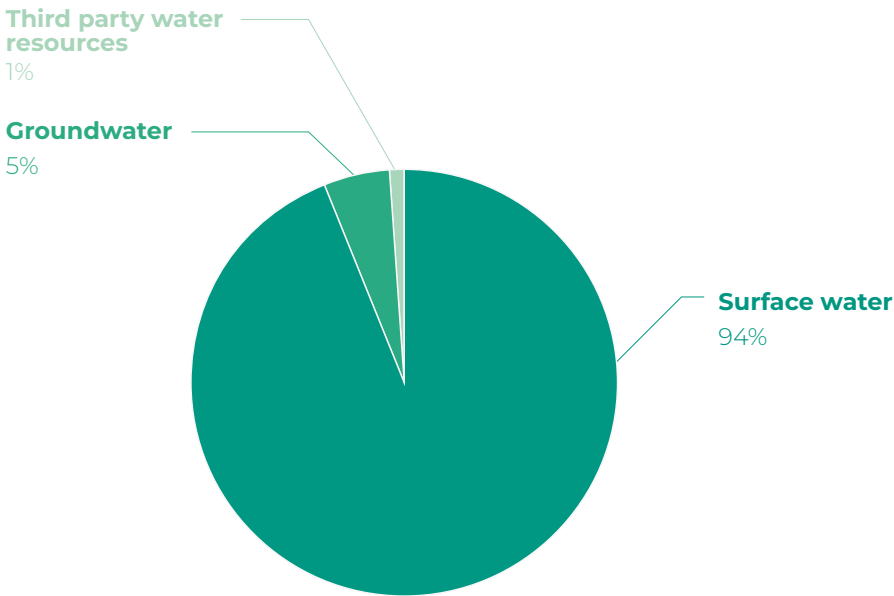
The overall data does not include the Broadway Subway worksite in Canada. In this case, water consumption is managed through licenses issued directly by the Client

A 9% change was recorded in the water requirements, mainly due to the varying distribution of project phases within the reporting scope. In particular, the Cross River Rail worksite showed the most significant change, attributable to the fact that excavation works were concentrated in this period. Below is a comparison between the division of water consumption by source of supply in the last three reporting years:



Water withdrawal by source of supply for 2019, 2020 and 2021 (in MI)

In 2021, underground water continues to be the main source of supply. 78% of overall water withdrawals are from underground water, a further 9 percent increase from 2020. The withdrawal of surface water remains stable, while withdrawals from public water mains has dropped slightly. This result is due to the Italian Brennero worksite fulfilling its water requirements by withdrawing from large underground water reserves, plentiful in the Upper Eisack Valley, therefore without stressing the water tables. **Wastewater** from our worksites consists of the water residue from site activities that has not been reused, the runoff water from the yards and the wastewater generated by offices and base camps. In 2021, this amounted to **7.005 MI**, divided as follows:



Division of wastewater in 2021

In order to avoid potential alterations in water quality, we ensure compliance with the discharge requirements set out 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 surface water bodies, depending on local conditions (e.g. proximity to the sewer). Almost all discharges were carried out into surface water. Discharges into underground water amount to just 5% and are limited to Australia.

We pay utmost attention to preventing potential accidental damage to the water and soil compartments,

through the selection of the products we use and the application of operating instructions and containment and waterproofing measures. Potential accidental damage in our worksites may be due to:


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

BIODIVERSITY

With our Environment Policy we commit to preserving protected areas and species at risk of extinction, and in general to adopting technical and organisational measures suitable for the protection and safeguard of ecosystems and biodiversity. With our Sustainable Procurement Policy, we have formalised our effort to collaborate with suppliers

who actively manage their impact on habitats and the environment. Before setting up the worksite, we carry out investigations aimed at identifying any relevant plant or animal species, for which it may be necessary to develop a specific management and monitoring plan. Below are the other main activities for protecting biodiversity:

Flora protection measures

-  We limit the removal of indigenous vegetation to the amount necessary for construction purposes to lessen the impacts on land use, so as to minimise the risk of erosion and sedimentation problems;
-  We guarantee the restoration of the vegetation at the end of the construction activities;
-  We map and mark the vegetation to be preserved;

Fauna protection measures

-  If injured animals are found during the cutting of the vegetation, we take charge of their transport to and treatment at previously identified veterinary centres.
-  Before removing vegetation, we guarantee the relocation of the animals found within the site boundaries to a suitable habitat, in areas far enough from our work activities to be safe but not too far from the original location and characterised by the same vegetation;

Respect for nature during local fauna relocation operations

We place great care in minimising the impact of our worksites on the local fauna. For this reason, our Environment team at the Central Interceptor site works with the Ecology NZ association to capture copper skinks, a type of native lizard in New Zealand, found in worksite areas and relocate them to the near-by Nirvana Reserve. To date 63 copper skinks have been rescued. During the relocation operations, a pukeko was seen, also called Australasian swamphen, a large bird found in Australia. The bird was in its nest with two newly hatched birds and other unhatched eggs. The copper skink relocation operations were suspended until the pukeko family finished brooding and moved on.



MATERIALS

The specific nature of the activities performed at our worksites entails significant demand for materials. In line with our Sustainability and Sustainable Procurement Policies, we promote the careful management of materials,

with the aim of limiting raw material depletion and reducing the environmental footprint associated with the supply of goods, by applying the following principles:



Reduce the consumption of materials and minimise waste



Give preference to materials with the highest benefits for the circular economy



Consider their environmental footprint in the selection phase



Encourage reuse on site

In 2021, we supplied **2.079.046 t** of construction materials. Compared to the previous reporting year, the amount of procured materials has gone down by 34%. This result is also affected by the exclusion from the reporting scope of projects that were close to the end of their life cycle. When considering just the projects included in both 2020 and 2021 reporting scopes, the intensity of the consumption of materials remained unchanged, and was 0.25 t/worked hour. Almost all materials used come

from non-renewable sources. The most significant raw materials for us are **aggregates and cement**, which make up 86% of the total, mainly used for the on-site production of concrete. The most significant semi-finished material is **Ready mix** concrete. Where possible, we install mills for the transformation of the excavation material into aggregates, so as to reduce our dependency on external procurement.

Fibre-reinforced concrete: eco-design applied to the segments of our tunnels

We are constantly looking for technical innovations that reduce the environmental impacts of our tunnels, also through **eco-design solutions**. An innovative practice that Ghella has implemented in recent years is the use of **steel fibres** instead of the traditional iron reinforcement of the **segments**, the elements that compose the ring-lining of the tunnel. This choice leads to a significant **simplification of the segment production process** requiring less labour, thereby **reducing the risk of injury**, and offering better **durability** and **ductility** of the element, which is also less subject to corrosion than bar reinforced elements. In this way, we are able to **reduce**, while maintaining the same performance, **steel content** in the concrete by 30-50%, resulting in a similar **reduction in the emissions** associated to the element due to less steel used per m³ of segment.

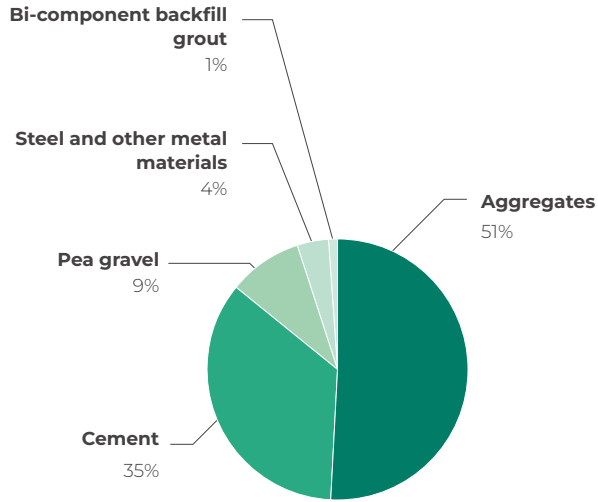
In addition, the **carbon footprint of steel fibres and reinforcement bars** can vary based on the industrial, energy and environmental policies of the countries where the elements are produced. In many cases, the former is lower, hence leading to a further reduction in the overall emissions of the fibre-reinforced elements compared to bar reinforced ones. With specific reference to the worksites where Ghella, in 2021, adopted the solution of fibre-reinforced segments, i.e. Central Interceptor in New Zealand and Cross River Rail in Australia, we **saved CO_{2eq}** emissions for each single project, between **53% and 82%** compared to the solution of reinforcement with bars, saving a total of **2,750 tCO_{2eq}** equivalent to the emissions associated to the average energy consumption of more than **850 Italian families** in a year.

Australia, Sydney
Sydney Metro City and Southwest

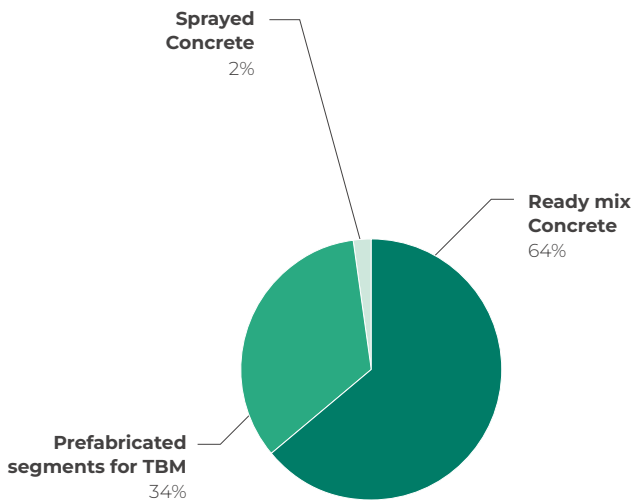


In addition, we promote the on-site production of concrete, with the installation of concrete mixing plants, and the on-site construction of segments. All of this makes it possible to directly manage production and therefore

have greater control over costs, over the efficiency of the process and the relative impacts (in this case, the impacts connected to transport are nil).



Consumption of raw materials in 2021



Consumption of semi-finished products in 2021

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

- identifying solutions during the design phase to reduce the quantities of concrete required;
- providing recovery systems for concrete waste during production;
- reusing temporary base camp accommodation;
- maximising the reuse of on-site excavation materials instead of purchasing new aggregates from quarries;
- using recycled materials compatible with aggregates (such as crushed glass) to reduce the purchase of new aggregates from quarries;
- producing or requesting from suppliers EPDs of the main construction materials for information about their environmental (and carbon) footprint throughout their life cycle.



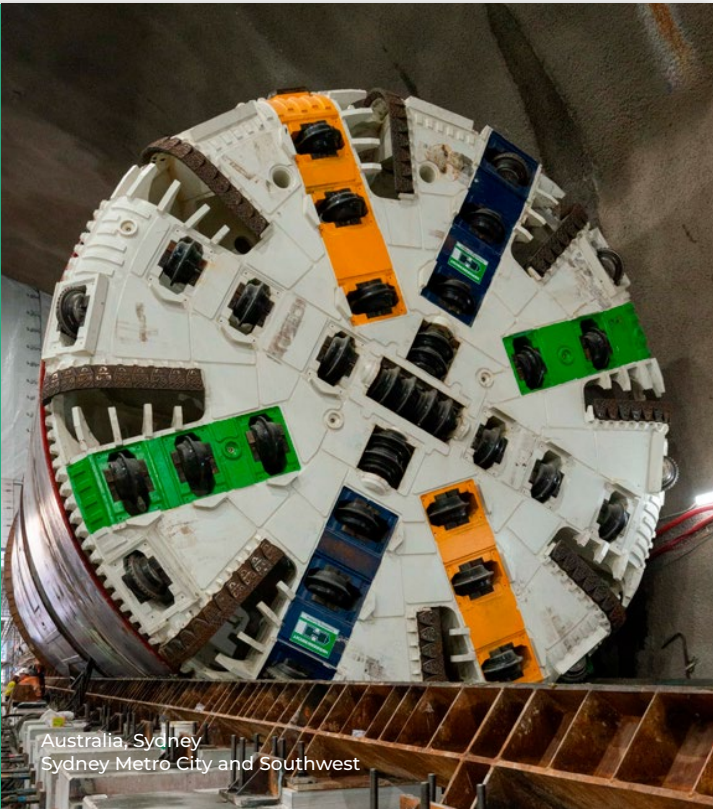
Australia, Sydney
Sydney Metro City and Southwest

Reusing TBMs - circular economy among Australian worksites

The **TBM**, tunnel boring machine, is **the heart of mechanised excavation**. TBMs are sophisticated machines, so large that they contain an entire team of up to 20 people during operations. This is why they have offices, bathrooms and even a kitchen inside!

To promote **the efficient use of resources** and **lower environmental impacts**, the Wendy and Mabel TBMs, used in the Sydney Metro City & Southwest project between October 2018 and March 2020, were **reconditioned** and **reused** for the Cross River Rail project in Brisbane, where they were renamed Else and Merle.

The most significant recovery elements were the eight shields (four for each machine), for a total weight of **800 tonnes of iron** and other noble components. In addition to savings in terms of raw materials, reconditioning on-site prevented **CO₂** emissions associated to the **transport** of new machines, which are typically procured from China for these markets.



Australia, Sydney
Sydney Metro City and Southwest

Eliminating before reducing: the Whitney Street shaft in the Central Interceptor worksite

Our underground excavation works involve the creation of **temporary shafts** used for the launch and recovery the TBM. These are designed to divide the sections travelled in lengths that can be managed by the machine.

The Client's design for the **Central Interceptor**, an important infrastructure for the management of wastewater in New Zealand, involved the creation of a shaft in a position that posed various challenges: located in the middle of an urban street, e with limited space to configure the excavation area and to mitigate inconvenience to the local community, the Whitney Street shaft was supposed to be built on downwards sloping ground, increasing the riskiness of the activity, also in terms of safety. In addition, sound barriers could not be installed due to the limited space in the surrounding Miranda Reserve, hence making working in two shifts impossible, thereby increasing the **overall construction times** of the section.

The project team, therefore, investigated the possibility to **eliminate the shaft**, analysing and mitigating the risks associated to a section with a curve and overall length of **1,193 m**, a **brand new record** for

MTBMs (Micro-TBM) with a diameter of less than 2.5m. After a long consultation phase with the Client, it was demonstrated that the developed solution would make it possible to achieve the quality set for the project and the proposal was accepted.

There are multiple **sustainability benefits** to this major design choice: the complete elimination of the risks associated to the shaft construction; the significant reduction in inconveniences to the local communities and stakeholders due to the elimination of superficial works; an estimated reduction of **200 tCO_{2eq}** emissions, associated to the avoided operations, an amount equivalent to the emissions associated to the annual energy consumption of more than **258 houses** in New Zealand.



Waste and excavation materials

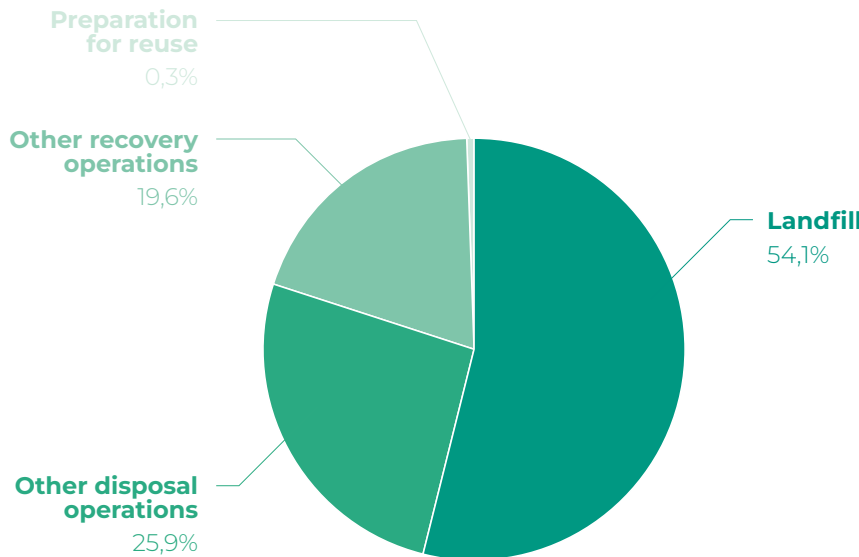
WASTE

Our worksites produce mainly construction and demolition waste, sludge, municipal waste from offices and base camps and waste deriving from the maintenance of vehicles and machinery, vegetation waste/green cuttings.

In 2021, we generated **91,279 t³¹ of waste materials overall**, with more than 99% being non-hazardous in

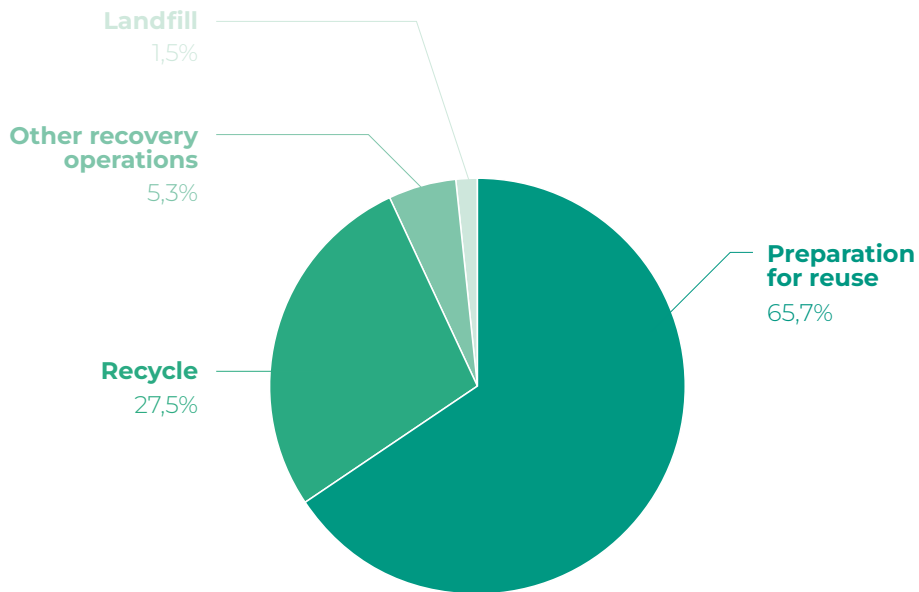
nature, confirming the high attention to the selection of substances and products used at our worksites. Less than 2% of the waste produced went to disposal.

Hazardous waste such as asbestos, sludge from collectors and mineral oils, amounting to **349 t**, are mostly disposed of and, specifically, going to landfill.



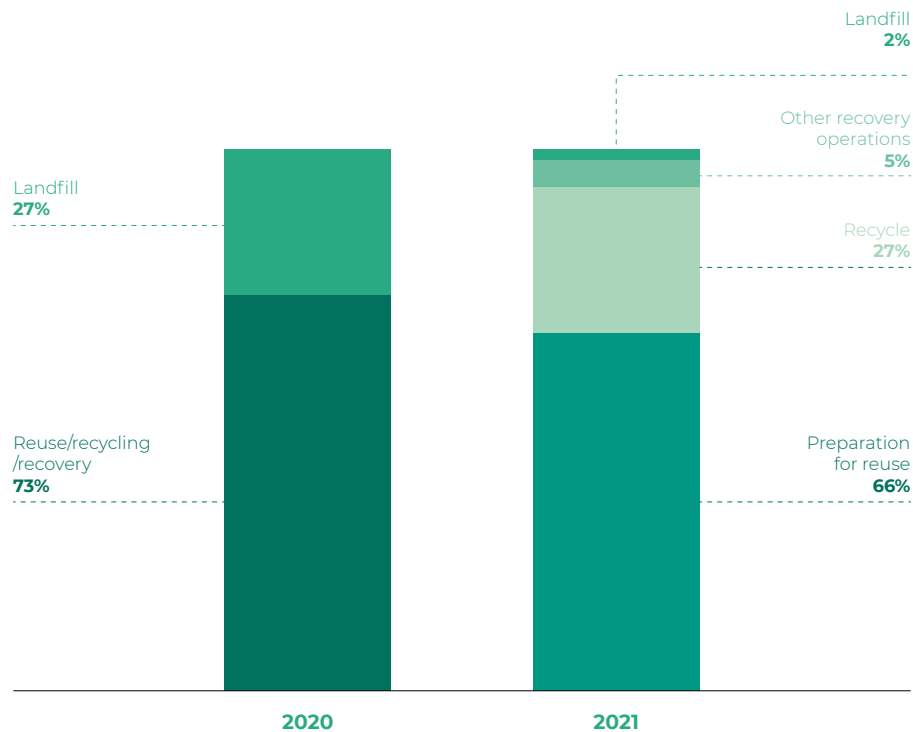
Hazardous waste by destination

In 2021, a total of **90,930 t** of non-hazardous waste was produced, of which only 1.5% went to landfill.



Non-hazardous waste by destination

Compared to last year, the amount of recovered/recycled/reused waste increased by 25 percentage points.



Total waste by disposal method in 2020 and 2021

From the underground to the buildings of Brisbane: reusing excavated earth to make bricks

The **Cross River Rail** project in Australia established an important **partnership** with **Austral Bricks Rochedale**, a **brick manufacturer** in the Brisbane area, with the aim of reusing part of the material generated by the excavation of the 5.9 km twin tunnels and 4 new stations, in line with **circular economy** principles.

The project is expected to generate about 1.6 million m³ of material over the course of the works, of which almost 300,000 m³ dug up by the TBMs alone. Of these, about **60,000 m³** will be used by Austral Bricks to produce bricks for the local market and for those of New Zealand and Asia. The amount of excavation material provided by Cross River Rail is equivalent to the volume of **24 Olympic pools** and will provide raw materials for Austral bricks for the next **6 or 7 years**. In fact, it is estimated that 50% of the brick buildings built in South-East Queensland over the coming years, such as houses, hospitals and schools, will contain “a piece” of the Cross River Rail tunnel.

At the moment about **80% of the excavation material** has been reused or stored for future use. Other uses include **reuse in other worksites** such as Brisbane Airport and the modernisation works of the Pacific Motorway. The material is **used again in other lots of the project**, such as RIS (Rail, Integrations and Systems) and **internally** at the worksite, at the Mayne Yard and Clapham Yard.

There are no limits to the creativity of uses for the excavation material: the spoil from the Cross River Rail project was even selected as the raw material for making the **Urban Developer Awards for Industry Excellence trophies**, a prize that celebrates innovative urban development projects in Australia and New Zealand.



Excavated earth and rocks

We are committed to maximising the reuse of excavation materials produced during our work, where deemed suitable through analysis and testing, in accordance with local legislation.

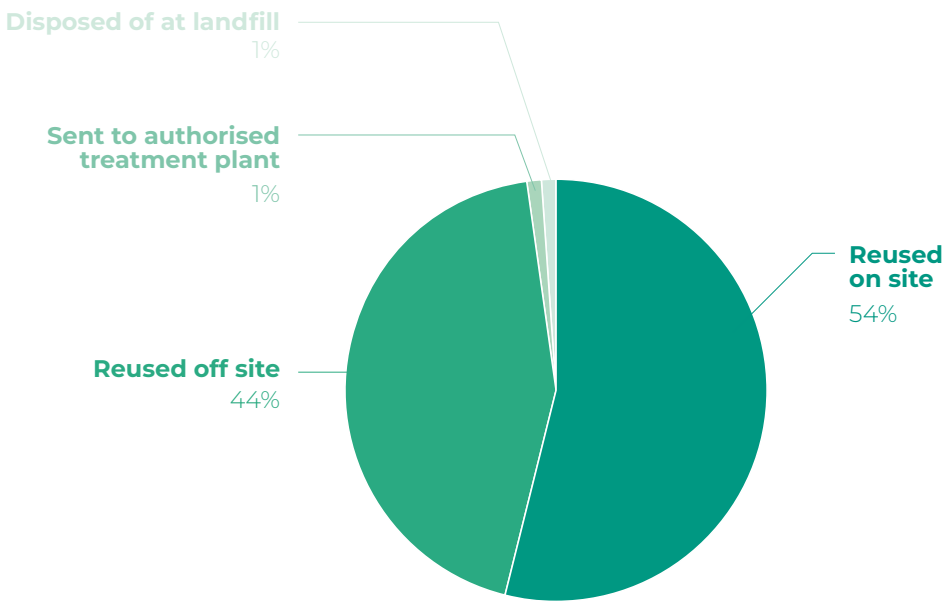
In 2021, we produced **4,740,355 t** of excavated materials, of which 98.6% was uncontaminated and reusable while just 1.4% was contaminated and therefore disposed of. 54% of the uncontaminated excavation material was reused on site, and specifically:

- 76% sent for environmental restoration - i.e. transferred to open-air deposits identified by the client to be reintegrated into the environment at the end of the work through replanting;

- 17% reused as aggregates for the production of the tunnel segments and lining castings;
- 6% reused in construction activities;
- 1% reused for backfilling, embankments and tracks.

The amount of excavation material that is reused off site has risen by 30 percentage points to around 44%. This responds to our commitment to collaborate with the other players in our sector, to contribute to a circular economy.

2% of the uncontaminated excavation material was sent to landfill or to authorised treatment plants.



Destination of uncontaminated excavated earth and rocks in 2021

Lime stabilisation of excavated earth at the NA-BA worksites

We work, with various business consortia, over three adjacent lots of the works for the High Speed/High Capacity line that will connect Naples to Bari, in Italy. We therefore aim to create **synergies** and **transfer best practices** among the various lots that we are involved in, to maximise the opportunities for improvement at our worksites.

One of these techniques is lime **stabilisation of the excavated earth**, currently being tested out at the Frasso Telesino-Telese lot, in order to make it reusable on-site for the construction of worksite embankments.

It is estimated that the worksite will produce, in its life cycle, about **800,000 m³** of **excess excavation material** that cannot be reused on site. According to our client's "Excavated earth and rocks reuse plan", this material would be sent to **external** allocated sites, about **90 km** away.

At the same time, the worksite's requirement for quarry materials for embankments amounts to about **300,000 m³**.

With lime stabilisation, we will be able to re-use about **200,000 m³** of excavation material on-site, **25% of the total**, with a considerable drop in impacts associated with the production and transport of material from the quarry and with the transport of excavation materials to the allocated site.

It has been estimated that this initiative will help reduce the emissions associated to the transportation by **more than 2,600 tCO₂eq**.

In addition, there will be fewer trucks on the road for the transport of materials, hence improving **local traffic** and **air quality** and limiting inconveniences to the **local communities**.

The lower requirement of quarry material will also help with the limited **availability** of raw materials associated to work going on at the same time in various lots.



Italy, Telesse
NA-BA



New Zealand, Auckland
Central Interceptor

The Rome head office

ELECTRICITY FROM THE GRID

2019 > 885.117 kWh
2020 > 767.962 kWh
2021 > 852.990 kWh

RENEWABLE ENERGY PRODUCED *

2019 > 33.750 kWh
2020 > 30.710 kWh
2021 > 29.030 kWh

WATER CONSUMPTION

2019 > 2.637 m³
2020 > 2.987 m³
2021 > 2.987 m³

WASTE

2021 > 2.005 ton

Composition of waste produced

Paper - 40%

Compost - 35%

Plastic/Glass/Metal - 14%

Landfill - 11%

2021 INITIATIVES AT THE HEADQUARTERS

- We have now made filtered water dispensers available, with the possibility of sanitising water bottles provided by the company;
- we have fitted all of the taps with water reducers;
- we have replaced all of the ceiling lamps with new LED lights reducing our lighting requirements by more than 30%;
- coffee pods are recycled for the construction of furniture;
- headquarters interiors were painted with Airlite, an organic compound paint that purifies the air, capturing smog and breaking it down;
- we have obtained LEED certification for the Conference room and started the process to obtain LEED EBOM certification for the entire building.

* Energy generated by a 25.8 kWp photovoltaic system

Italy, Roma
Headquarter



Italy, Rome
Headquarter



Appendix

Methodological note

OBJECTIVES

The Sustainability Report is the tool that we use to communicate the impacts and results of Ghella's activities and of its most significant production units to all of our stakeholders. For us this is fundamental to the continuous

improvement process because through monitoring and measuring performance alone it is possible to plan and define a solid and competitive strategy.

REPORTING PERIOD AND SCOPE

We have prepared a Sustainability Report every year and voluntarily, starting in 2019. The data included refer to the period 1st January 2021 - 31 December 2021 and, where applicable, are compared with the results of the two previous years. In addition to the Parent Company Ghella S.p.A., the Consolidated Financial Statements also include the companies controlled by it, directly or indirectly. Specifically, subsidiaries are bodies that Ghella S.p.A. controls, either as the direct or indirect shareholder

of the majority of votes at the shareholders' meeting, or by having the dominating influence expressed through the power to determine the financial and managerial choices of the body, obtaining the relative benefits. The Sustainability Report, on the other hand, includes the following production units in addition to the Ghella S.p.A. parent company (the headquarters of Rome, Turin, Teleso, Buenos Aires):

COUNTRY	PROJECT	AREA	CUSTOMER	JV	COMPANY
Australia	Cross River Rail	Metro	Cross River Rail Delivery Authority	CPB, BAM, Ghella, UGL	Pulse partnership Pty Limited
Canada	Broadway Subway Project	Metro	Province of British Columbia	Acciona Infrastructure, Ghella	Broadway Subway Project Corporation
Italy	Brenner Base Tunnel - Lot "Mules 2-3"	Railway	BBT SE - Brenner Basistunnel	Astaldi, Ghella, Cogei, PAC	Brennero Tunnel Construction S.c.a.r.l.
Italy	High Speed Naples-Bari, Cancelli - Frasso Telesino section	Railway	RFI Rete Ferroviaria Italiana S.p.A.	Pizzarotti, Ghella, Itinera	Consorzio CFT
New Zealand	Central Interceptor	Water	Watercare Services Ltd	Ghella, Abergeldie	Ghella Abergeldie JV

Projects were chosen according to parameters that represented the environmental, social and economic impact. The collected and reported data refer to the projects in their entirety.

The reporting for 2021 also includes the subsidiaries Ghella Pty Ltd, Ghella Limited and Ghella Canada, that the aforementioned productions units are managed by.

The material themes are those identified through the materiality analysis of 2019 and described in the chapter "Company".

The data provided in the chapter "Environmental protection" refer to production sites only. The Sustainability Report is prepared by the Compliance & Sustainability department, reviewed by the ESG Committee and approved by Ghella S.p.A.'s Board of Directors.

KPMG S.p.A. performed a Limited Assurance Engagement in accordance with ISAE 3000 (Revised). For more details on the audit and the procedures conducted by the independent auditor, refer to the "Independent auditors' report on the sustainability report".



Australia, Sydney
Sydney Metro City and Southwest



GRI CONTENT INDEX

Ghella has reported in accordance with the GRI Standards for the period 1st January 2021 – 31st December 2021.

GRI STANDARD	DESCRIPTION	PAGE	NOTES
General disclosures			
2-1	Organizational details	6, 14	The headquarter of Ghella S.p.A. is located at Via Pietro Borsieri, 2/A - 00195 Rome
2-2	Entities included in the organization's sustainability reporting	82-83	
2-3	Reporting period, frequency and contact point	82	
2-4	Restatements of information		
2-5	External assurance	83, 88-90	
2-6	Activities, value chain and other business relationships	6-7, 22-23	
2-7	Employees	35-36	
2-8	Workers who are not employees	36	
2-9	Governance structure and composition	14-16	
2-10	Nomination and selection of the highest governance body	16	
2-11	Chair of the highest governance body	14	
2-12	Role of the highest governance body in overseeing the management of impacts	16	
2-13	Delegation of responsibility for managing impacts	16	
2-14	Role of the highest governance body in sustainability reporting	16, 83	
2-15	Conflicts of interest		Board members sign a declaration of responsibility and absence of conflict of interest.
2-16	Communication of critical concerns		"The reports are processed and verified by the competent control body (OdV for Italy, General Counsel for the foreign perimeter). Upon completion of the activities, the reports are circulated to the Board of Directors. We recorded no critical reports in the year 2021."
2-17	Collective knowledge of the highest governance body		The external certification body RINA S.p.A. annually conducts a third-party audit of the organization to verify compliance with the requirements of ISO 9001, 14001, 45001 of the Management System and Policies signed by the President.
2-18	Evaluation of the performance of the highest governance body		The BoD is not subject to performance evaluation.
2-19	Remuneration policies		Our practice is to pay in line with the market to attract the best skills and most experienced resources.
2-20	Process to determine remuneration		Due to the nature of our organization, the indicator is not applicable.
2-21	Annual total compensation ratio		5.25 in 2021 (+9% over 2020). The result is an average of what was collected from the units included in the scope of reporting and is calculated on employees only.

GRI STANDARD	DESCRIPTION	PAGE	NOTES
General disclosures			
2-22	Statement on sustainable development strategy	3	
2-23	Policy commitments	17	
2-24	Embedding policy commitments	17	
2-25	Processes to remediate negative impacts	17-20	
2-26	Mechanisms for seeking advice and raising concerns	20	
2-27	Compliance with laws and regulations		There are no significant cases of non-compliance with laws or regulations in 2021.
2-28	Membership associations	59	
2-29	Approach to stakeholder engagement	10	
2-30	Collective bargaining agreements	41	
3-1	Process to determine material topics	10	
3-2	List of material topics	10	
Anticorruption			
3-3	Management of material topics	17-20	
205-3	Confirmed incidents of corruption and actions taken		During 2021, there were no corruption cases and no lawsuits against Ghella or his representatives.
Non discrimination			
3-3	Management of material topics	17-20, 37	
406-1	Incidents of discrimination and corrective actions taken		During 2021, there were no incidents of discrimination by size of diversity or violation of the rights of indigenous people.
Diversity and equal opportunity			
3-3	Management of material topics	17-20, 37-39	
405-1	Diversity of governance bodies and employees	37-39	
Human capital development			
3-3	Management of material topics	17-20	
401-3	Parental leave	37	
404-1	Average hours of training per year per employee	40	
-	Sustainability culture	42	



GRI STANDARD	DESCRIPTION	PAGE	NOTES
Occupational health and safety			
3-3	Management of material topics	17-20, 44-45	
403-1	Occupational health and safety management system	44-45	
403-2	Hazard identification, risk assessment, and incident investigation	44-49	
403-3	Occupational health services	44-45, 49	
403-4	Worker participation, consultation, and communication on occupational health and safety	44-45	
403-5	Worker training on occupational health and safety	40, 44-45, 47	
403-6	Promotion of worker health	44-49	
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	44-49	
403-9	Work-related injuries	45-47	
Externality evaluation			
201-1	Direct economic value generated and distributed	52-53	
Evaluation of suppliers			
3-3	Management of material topics	54-55	
204-1	Proportion of spending on local suppliers	55	
308-1	New suppliers that were screened using environmental criteria	55	
408-1	Operations and suppliers at significant risk for incidents of child labor	55	
414-1	New suppliers that were screened using social criteria	55	
Energy and emissions			
3-3	Management of material topics	62-63, 65-69	
302-1	Energy consumption within the organization	65-66	
305-1	Direct (Scope 1) GHG emissions	67	
305-2	Energy indirect (Scope 2) GHG emissions	67	
-	Sustainable site facilities	68-69	

GRI STANDARD	DESCRIPTION	PAGE	NOTES
Resource protection			
3-3	Management of material topics	62-63, 70-75	
301-1	Materials used by weight or volume	73-74	
303-1	Interactions with water as a shared resource	70	
303-2	Management of water discharge-related impacts	71-72	
303-3	Water withdrawal	71	
303-4	Water discharge	71	
304-2	Significant impacts of activities, products and services on biodiversity	72	
Waste			
3-3	Management of material topics	76-79	
306-3	Waste generated	76-78	
306-4	Waste diverted from disposal	76-78	
306-5	Waste directed to disposal	76-78	



KPMG S.p.A.
Revisione e organizzazione contabile
Via Curtatone, 3
00185 ROMA RM
Telefono +39 06 80961
Email it-fmauditaly@kpmg.it
PEC kpmgspa@pec.kpmg.it

(This independent auditors' report has been translated into English solely for the convenience of international readers. Accordingly, only the original Italian version is authoritative)

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 2021 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 "Methodological note" 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 International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants (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 Limited, società di diritto inglese.

Ancona Bari Bergamo
Bologna Bolzano Brescia
Catania Como Firenze Genova
Lecce Milano Napoli Novara
Padova Palermo Parma Perugia
Pescara Roma Torino Treviso
Trieste Varese Verona

Società per azioni
Capitale sociale
Euro 10.415.500,00 i.v.
Registro Imprese Milano Monza Brianza Lodi
e Codice Fiscale N. 00709600159
R.E.A. Milano N. 512867
Partita IVA 00709600159
VAT number IT00709600159
Sede legale: Via Vittor Pisani, 25
20124 Milano MI ITALIA



Ghella Group
Independent auditors' report
31 December 2021

Auditors' responsibility

Our responsibility is to express a conclusion, based on the procedures performed, about the compliance of the sustainability report with the requirements of the GRI Standards. We carried out our work in accordance with the criteria established by "International Standard on Assurance Engagements 3000 (Revised) - Assurance Engagements other than Audits or Reviews of Historical Financial Information" ("ISAE 3000 revised"), issued by the International Auditing and Assurance Standards Board applicable to limited assurance engagements. This standard requires that we plan and perform the engagement to obtain limited assurance about whether the sustainability report is free from material misstatement.

A limited assurance engagement is less in scope than a reasonable assurance engagement carried out in accordance with ISAE 3000 revised, and consequently does not enable us to obtain assurance that we would become aware of all significant matters and events that might be identified in a reasonable assurance engagement.

The procedures we performed on the sustainability report are based on our professional judgement and include inquiries, primarily of the parent's personnel responsible for the preparation of the information presented in the sustainability report, documental analyses, recalculations and other evidence gathering procedures, as appropriate.

Specifically, we carried out the following procedures:

- 1) analysing the reporting of material aspects process, specifically how these aspects are identified and prioritised for each stakeholder category and how the process outcome is validated internally;
- 2) comparing the financial disclosures presented in the "Key financial figures" and "Economic value generated and distributed" sections of the sustainability report with those included in the group's consolidated financial statements;
- 3) understanding the processes underlying the generation, recording and management of the significant qualitative and quantitative information disclosed in the sustainability report.

Specifically, we held interviews and discussions with the parent's management personnel. We also performed limited procedures on documentation at specific sites (Brennero, Cancellio Frasso Telesino, Cross River Rail and Central Interceptor) to gather information on the processes and procedures used to gather, combine, process and transmit non-financial data and information to the office that prepares the sustainability report.

Furthermore, with respect to significant information, considering the group's business and characteristics:

— at parent level

- a) we held interviews and obtained supporting documentation to check the qualitative information presented in the sustainability report;
- b) we carried out analytical and limited procedures to check, on a sample basis, the correct aggregation of data in the qua on a sample basis, supporting the correct application of the procedures and methods used to calculate the indicators ntitative information;



— with reference to the Brennero, Canello Frasso Telesino, Cross River Rail and Central Interceptor sites, which we have selected on the basis of their business, contribution to the key performance indicators at consolidated level and location, we obtained documentary evidence on a sample basis, supporting the correct application of the procedures and methods used to calculate the indicators.

Conclusion

Based on the procedures performed, nothing has come to our attention that causes us to believe that the 2021 Sustainability report of the Ghella Group has not been prepared, in all material respects, in accordance with the requirements of the GRI Standards, as described in the “Methodological note” section of the sustainability report.

Rome, 2 August 2022

KPMG S.p.A.

(signed on the original)

Marco Maffei
Director of Audit

Note

- 1 PORTER M. E., KRAMER M. R., Creating Shared Value, in “Harvard Business Review”, January/February 2011, p.64-77
- 2 “Scope 1 and 2” emissions mean direct greenhouse emissions generated through combustion in plants, vehicles, boilers, etc either owned or under the company’s control (Scope 1) and the indirect greenhouse gas emissions generated through the electricity used by the organisation (Scope 2)
- 3 <https://www.bbtinfo.eu/it/bilancio-della-co2/>
- 4 <https://www.napolibari.it/content/fsinapolibari/it/il-progetto.html>
- 5 <https://cloud.telt-sas.com/index.php/s/MWLBhuOJQMTtpA>
- 6 Sydney Metro CSW Business Case Summary
- 7 Cross River Rail business case, Building Queensland, August 2017
- 8 Described in the Sustainability Report 2020 (p. 70)
- 9 https://www.sydneymetro.info/sites/default/files/2021-09/Project_Overview_Sydney_Metro_Western_Sydney_Airport_September_2020.pdf
- 10 https://www.sydneymetro.info/sites/default/files/2021-09/Sydney_Metro_Western_Sydney_Airport_Environmental_Impact_Statement_Newsletter.pdf
- 11 Eglinton Crosstown West Extension Initial Business Case, Feb 2020, Metrolinx
- 12 <https://www.adb.org/projects/40080-013/main#project-pds>
- 13 <https://www.ametro.gr/?p=8313&lang=en>
- 14 <https://roads-waterways.transport.nsw.gov.au/projects/f6/index.html>
- 15 <https://www.worldbank.org/en/news/feature/2014/07/29/avances-matanza-riachuelo>
- 16 <http://www.idea-rt.com/projects-our-work>
- 17 Approved by the Interministerial Committee for Ecological Transition (Cite) in resolution no. 1 of March 8, 2022
- 18 Year of reference 2020
- 19 Employees with the right to parental leave are those with contracts that cover this aspect and who had children during the year.
- 20 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 by considering the ratio between the number of injuries and the total hours worked, multiplied by 1,000,000
- 21 The lost time incident severity rate (LTISR) shows the average severity of incidents lasting more than three days as established by Eurostat and is calculated in accordance with UNI 7249 by considering the ratio between the number of days of absence from work and the total number of hours worked multiplied by 1,000
- 22 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 by considering the ratio between the number of recordable occupational injuries and the total hours worked, multiplied by 1,000,000
- 23 The data from 2020 and 2019 were recalculated on the total of active Projects in those years and include Ghella S.p.A. workers
- 24 occupational injuries - “LTI” lost-time injuries
- 25 injuries with medical treatment only - medical treatment case “MTC”
- 26 injury that did not lead to absence from work - restricted work case “RWC”
- 27 The rate is calculated by dividing the number of severe injuries by the total number of hours worked multiplied by 1,000,000
- 28 <https://www.bbtinfo.eu/it/osservatorio/>
- 29 The data only refer to investments made by Ghella S.p.A., and does not take into consideration the contributions of the worksites to the respective local communities. The data include donations and sponsorships for foundations that promote scientific research, cultural events, music academies
- 30 The list presents some examples of projects implemented in some of our worksites
- 31 The data do not include the Central Interceptor worksite in New Zealand. In addition, it should be noted that 0.25 Ml hazardous waste (mainly septic waste), and 2,705 m3 non-hazardous waste (generic waste from offices, paper and cardboard) was sent to the landfill, of which 48% going to recycling and 52% going to landfill.





Greece, Athens
Photo by Marina Caneve from the photographic project "Di Roccia, Fuochi e Avventure Sotterranee"



Elemental Chlorine Free



Acid-Free



Carte di Lunga Durata



Carta da fonti gestite in
maniera sostenibile



