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ABOUT CK HUTCHISON HOLDINGS LIMITED

The CK Hutchison Group (the “Group”) is a multinational conglomerate committed to development, innovation and technology in four core businesses: ports and related services, retail, infrastructure, and telecommunications.

Ports and Related Services

As the world's leading port investor, developer and operator, the Group's Ports division holds interests in 52 ports comprising 291 operational berths in 26 countries, including container terminals operating in six of the 10 busiest container ports in the world. In 2021, the division handled a total throughput of 88.0 million twenty-foot equivalent units. It also engages in river trade, cruise terminal operations and ports related logistic services.

Retail

The Group's Retail division is the world's largest international health and beauty retailer, with over 16,300 stores in 28 markets worldwide. Its diverse retail portfolio comprises health and beauty products, supermarkets, as well as consumer electronics and electrical appliances. It also manufactures and distributes bottled water and beverage products in Hong Kong and Mainland China.

Infrastructure

The Group's Infrastructure division includes its controlling shareholding in CK Infrastructure Holdings Limited (“CKI”) and interests in six infrastructure assets that are co-owned with CKI. CKI is a global infrastructure company with diversified investments in energy infrastructure, transportation infrastructure, water infrastructure, waste management, waste-to-energy, household infrastructure and infrastructure related businesses. Its investments and operations span Hong Kong, Mainland China, the United Kingdom, Continental Europe, Australia, New Zealand, Canada and the United States.

Telecommunications

A pioneer in mobile data communication technologies, the Group's Telecommunications division is a leading global operator and innovator of converged telecommunication and digital services implementing innovative technologies in connectivity around the world.

MESSAGE FROM THE CHAIRMAN

In 2021, our Group's sustainability initiatives have continued to gain momentum, as has our resolve to serve society sustainably and enable the net-zero transition for all.

In the 2020 Sustainability Report, we discussed our Group's important role in serving society through keeping people connected, securing the movement of trade and supply chains, ensuring the availability of daily necessities, and developing critical infrastructure to provide essential services to millions of customers around the world. The COVID-19 pandemic has further emphasised the critical role the Group plays in the effective functioning of these systems.

What has also been clear is how the Group's core businesses are, each in unique ways suited to their differing business contexts, taking meaningful action to enable the net-zero transition. With every year that passes, the urgency of action to address climate change increases. The Group welcomes the developments and pledges made at COP26, with strengthened commitments now more aligned to a two degrees pathway. It also, however, recognises that there is much more work to be done by all sections of society if these commitments, as well as the preferred 1.5 °C pathway, are to stay within reach.

Across the Group, work is underway to continuously move the bar higher and to keep challenging the realms of possibility by adopting cutting-edge innovation and collaborating internally and externally. To ensure the Group's approach is leading practice, all core businesses have been assessing the pathway to setting science-based targets in line with the Group's direction. Both A.S. Watson and CK Hutchison Group Telecom made significant progress during 2021 by setting scope 1, 2 and 3 targets that are pending validation by the Science Based Targets initiative. UK Power Networks and Hong Kong Electric have also taken the step to have their targets validated as science-based.

In this report, the Group has laid out 10 net-zero transition opportunities with respect to which it is taking significant steps to drastically cut its own carbon footprint, enable profound change across the industries in which it operates and grow value-creating business solutions. To summarise these actions, which are explored in further detail in this report:

- The Ports division is rolling out a global electrification programme of its vehicles and infrastructure to progressively phase out diesel and is planning to develop a green hydrogen

hub and centre of sustainability excellence at Freeport East, centred on two of its ports. At its peak, the project is expected to produce 1GW of green hydrogen, 20% of the 5GW target in the UK's Ten Point Plan for a Green Industrial Revolution;

- The Retail division is designing products and services with circular economy principles in mind, eliminating unnecessary waste and GHG emissions. Among other goals, it is committing to 100% of its Own Brand plastic packaging being reusable, recyclable or compostable by 2025 as part of being a signatory to the Ellen MacArthur Foundation-led New Plastics Economy Global Commitment;
- The Infrastructure division is investing and growing its renewable energy portfolio, readying its gas networks for the future of hydrogen, connecting market-leading levels of renewable energy to the grid, and adopting carbon capture, use and storage to further drive down emissions at its waste-to-energy operations; and
- The Telecommunications division is providing leadership in innovation in 5G, IoT applications and smart city solutions which are crucial to accelerating the net-zero transition. 3 UK is helping Hutchison Ports Port of Felixstowe roll out remote-controlled rubber-tyred gantry cranes and the division's dedicated data analytics business, CKDelta, is partnering with UK Power Networks and ista to provide data-driven insights that will support the large-scale electric vehicle rollout in the UK as it looks to ban internal combustion engines by 2030.

Another significant step taken by the Group is the commitment to phase out its coal-fired power generation globally by 2035. To date, coal-fired generation installed capacity has reduced from 53% in 2016 to 32% in 2021, and a plan is in place to reduce this to zero before 2035.

The Group recognises that the world's transition to net-zero is not a linear path. It is a route upon which the goalposts will move, technologies will change, and understanding will evolve. It must be handled humbly, with an authentic and ambitious desire for change that is rooted in its business purpose, and an approach that is firmly based on science.

It is important that the opportunities presented by a net-zero future are open to everyone, with both the costs and opportunities fairly distributed. To address this, the Group's businesses are playing an active role in tackling issues of inequity that may arise, working closely with regulators and governments.

While the Group is still working on its exact pathway, it is already contributing meaningfully, as well as being committed to improving the sophistication and maturity of its approach, and reporting faithfully to its stakeholders as it progresses.

With millions of loyalty members globally, the Group is increasingly aware that consumer preferences are evolving and that they are looking to align with brands that share their values and interests. Beyond providing solutions to its customers and communities along the path to net-zero, the Group is growing value-creating opportunities to address other sustainability challenges, including those that help drive a circular economy and sustainable sourcing, as well as helping build a more inclusive and diverse world. The Retail division has created a number of product lines and platforms that enable customers to shop with sustainability in mind. For example, Sustainable Choices, a filter and labelling mechanism, was launched by Watsons in 2020 to provide customers choice in four categories: Clean Beauty; Refill; Better Ingredients and Better Packaging. In 2021, it added 1,600 Sustainable Choices products both in-store and online in close collaboration with brand partners such as Johnson & Johnson and Unilever. Through Superdrug's #ShadesOfBeauty campaign, it is working to give women of colour a voice and to make high street beauty more inclusive through greater available choice and ensuring diverse representation in publicity and marketing, among other goals.

The Telecommunications division is also aiming to offer its customers more sustainable choices such as handset take-back and recycling programmes, and increasingly stocking a range of lower impact handsets and mobile accessories. It is also playing an important role in digital inclusion through its work to bring connectivity to rural communities around the world.

Following two years of pandemic control measures, 2021 marked the beginnings of global recovery, helped by the accelerated vaccination rollout programmes and easing of lock-downs and economic reopening in many parts of the world.

Throughout the course of the pandemic, the Group's employees have been at the heart of its continued ability to achieve excellent operational performance and reliability of service. Supporting their welfare, as well as that of the Group's customers and communities, has been at the forefront of decision-making. Many emergency response actions first implemented in 2020, such as distributing personal protective equipment and working from home measures, became part of ongoing operations during 2021, and the Group's focus also turned to supporting employee wellbeing, particularly

mental health, following years of flux and change. For example, before transitioning back to offices, the Retail division conducted a wellbeing survey to understand the support its employees needed to ensure targeted efforts. It also trained representatives from its HR teams globally to be Mental Health First Aiders to support employees through an accredited course by Mental Health First Aid England.

The COVID-19 pandemic has hit disadvantaged communities the hardest, with existing issues of fuel poverty being all the more exacerbated. The Group's networks implemented support tariff schemes, among other measures, to support its customers. To make sure it focused resources where they can have greatest impact, Northern Gas Networks developed an online tool including a heat map of customers against vulnerability factors, such as air quality, fuel poverty levels, and number of food banks. The business has also adapted its Community Partnering Fund, which provides grants for grass roots projects, to now have a "recovery from COVID-19" category, and its Warm Hubs model, which provides places for communities to come together, has been adapted for remote delivery, with slow cookers and energy advice packs distributed via food banks.

The Telecommunications businesses have likewise continued to support its customers and communities to work and study from home with free connectivity and zero-rating essential health and educational sites, while also seeking partnerships for even better outcomes. **3** Ireland worked with the mental health charity, Aware, to enable its 115 trained volunteers to take calls securely while volunteering from home. **3** UK partnered with the UK's Department for Education's Get Help with Technology programme, to provide the most disadvantaged children across England with unlimited data allowing them to continue with their education online until the end of the school year.

In 2021, the Group became a signatory to the United Nations Global Compact and this report therefore acts as the Group's first Communication on Progress as well as its avenue to show continued support for the Global Compact and its ongoing commitment to the initiative and its principles.

I would like to take this opportunity to thank our team members around the world for everything they have done, and continue to do, for our Group. Their hard work, ingenuity and dedication continue to make us who we are. I also want to thank the Board, shareholders and other stakeholders for their continued support in our efforts to create positive impact now and into the future.

Victor T K Li
Chairman, CK Hutchison
31 May 2022

ABOUT THIS REPORT

This report is the third standalone report in the Group's sustainability disclosure journey, where it seeks to continuously refine and improve reporting approaches as well as address the sustainability concerns of its stakeholders. It should be read in conjunction with the Group's 2021 Annual Report, which contains a comprehensive review of its financial performance and corporate governance frameworks and practices.

Reporting period

This report covers the year from 1 January to 31 December 2021, unless otherwise specified.

Reporting scope


The information included in this report covers the operating units in the Group's four core businesses of which it has financial control. Greenhouse gas emissions are consolidated in line with the Greenhouse Gas Protocol excluding associate and affiliated companies where the Group has no financial control.

Reporting frameworks

Hong Kong Stock Exchange's ESG Guide

This Report was prepared in accordance with the mandatory disclosure requirements and the "comply or explain" provisions of the Environmental, Social and Governance Reporting Guide ("ESG Guide") as set out in Appendix 27 to the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited. The ESG Guide content index set out in Annex 2 to this report outlines how the ESG Guide has been applied.


TCFD

The Group supports the Task Force on Climate-related Financial Disclosures ("TCFD") recommendations. This report has been developed with reference to the TCFD recommendations and a separate standalone TCFD report will be made available on the [Group's corporate website](#)  during 2022.

United Nations Global Compact

The Group is a signatory of the United Nations Global Compact, a voluntary multi-stakeholder platform that convenes multinational companies to align against 10 principles covering environment, anti-corruption, human rights and labour standards. As a signatory, the Group supports the 10 principles and is committed to making them part of its strategy, culture and day-to-day operations. It is also committed to an annual Communication on Progress, which is incorporated within this report, to communicate the progress made in implementing the 10 principles and in supporting broader UN Sustainable Development Goals ("SDGs").

Further information

Recognising increasing demand from the stakeholders of the Group for more information beyond the discussion on material topics included in this report, it is supplemented with an expanded sustainability section on the [Group's corporate website](#) .

The Group welcomes feedback and suggestions on this report. Please contact us at: sustainability@ckh.com.hk

Located at mountain ranges of 2.4 to 2.8km in altitude at the south of Dali City, Yunnan Province, China, the Dali Wind Farm features 64 units of wind turbine with a total installed capacity of 48MW



SUSTAINABILITY AT CK HUTCHISON

Reporting on what matters

Stakeholder engagement

Understanding stakeholder views is crucial to defining a strategy that has the interests of society and the environment at heart. The outcomes of stakeholder engagement have been instrumental in setting the Group's ongoing sustainability strategy development.

As the Group has a diverse range of businesses and operates globally, maintaining a close dialogue with key stakeholders in each industry and geographical jurisdiction is critical when making business decisions and considering their potential sustainability impact.

The Group has a broad range of stakeholders that are engaged on a regular and ongoing basis through a variety of channels such as meetings, liaison groups, panel discussions, workshops and surveys, in order to understand their views and better meet their expectations. These include:

- Employees;
- Customers;
- Suppliers and business partners;
- Shareholders and bond investors;
- Banks and creditors;
- Governments and regulators;
- Local communities; and
- Non-government organisations.

Regarding investor engagement, the Group conducts an annual sustainability investor outreach in order to take a pulse of investor concerns and expectations. During 2021, the Group contacted a selection of its debt and equity investors and held one-to-one calls with the portfolio managers and sustainability team members in order to solicit their feedback to be used as an important input to the Group's ongoing sustainability strategy development and disclosures. The consistent feedback received across all investors interviewed was that they wanted to understand the Group's climate action strategy better; as key readers of this report, and as a top priority for the Group, an expanded section on this topic is provided.

The Group also recognises that ESG rating agency assessments are important inputs in how its investors assess the Group's sustainability efforts. With multiple ratings agencies in existence, each with different sets of criteria and assessment frameworks, the Group used feedback from its sustainability investor outreach to prioritise focus on two agencies: Sustainalytics and MSCI. Active engagement and specific disclosures against each of the agencies frameworks is essential to showcase the Group's efforts and to meaningfully influence scores. Throughout 2021, the Group dedicated significant efforts to engaging with these agencies to understand their methodologies and tailor disclosures accordingly in order to reflect more accurate representation of the Group's efforts.

Materiality assessment

Each of the Group's core businesses faces different sustainability challenges and therefore requires an individualised and tailored approach to sustainability impact assessment and prioritisation.

The Group's materiality assessment is an iterative process that is updated with new information and emerging trends by way of a three-step process: identification, prioritisation and validation.

1. Identification:

- Identified potential sustainability issues relevant to the Group referencing:
 - Material issues covered in industry-specific materiality frameworks such as the Global Reporting Initiative ("GRI") Standards and the Sustainable Accounting Standards Board ("SASB") Standards;
 - The SDGs as well as the resources contained within the Blueprint for Business Leadership on the SDGs;
 - ESG rating agency reports; and
 - Research on emerging issues and global socioeconomic trends.

2. Prioritisation:

- Worked with core businesses to consider material issues with regard to their influence on business success;
- Issued questionnaires and conducted one-to-one interviews with relevant stakeholders to understand the importance of these issues to them; and
- Prioritised issues that have a significant impact on the Group's ability to create long-term and sustainable value.


3. Validation:

- Reviewed and approved the material issues with the Group's core businesses, cross-departmental Sustainability Working Group and the Sustainability Committee.

Group Sustainability Framework and material topics

Figure 1 outlines the Group's Sustainability Framework, including four pillars and nine goals, alongside their related material topics.

How these goals are achieved and how these material topics are impacted across the Group will differ depending on the nature of the business sectors and geographies in which each core business operates. While this report is focused on material information,

further detail on how each goal is being addressed can be found in the sustainability section of the [Group's corporate website](#) , which is updated regularly to take account of the most current developments.

Four goals have been prioritised as Group-wide focus areas for 2021-2022, including:

1. Take action on climate change;
2. Offer customers sustainable products and invest in and embrace innovation to achieve transformational impacts;
3. Create great places to work; and
4. Take all steps to protect employees and support communities and other stakeholders through the pandemic.

While the goal – Take all steps to protect employees and support communities and other stakeholders through the pandemic – is not a perpetual goal as in the case of the others, it has been individually listed given the significance of the pandemic and to ensure maximum focus as the world continues its recovery.

Progress and strategies to address each of these four goals in respect to each of the four core businesses are outlined in a traffic light assessment in Table 2, and are discussed in the next section.



Figure 1: Group Sustainability Framework and material topics

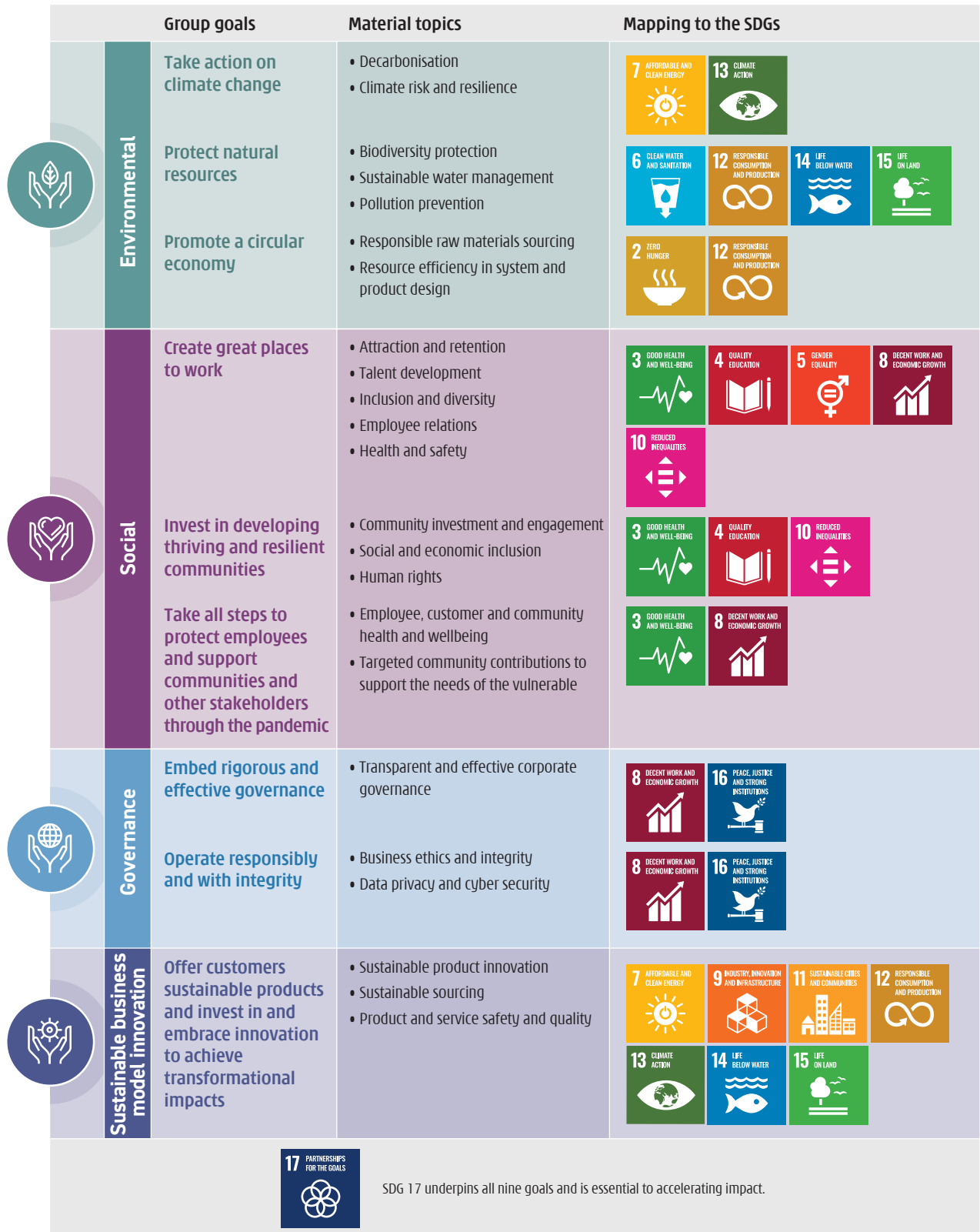


Table 2: 2021 progress on priority sustainability goals

Goals	Ports		Retail		Infrastructure		Telecommunications	
1. Take action on climate change								
Set a short-term target aligned to the science, ideally validated by the Science Based Targets initiative (SBTi).	<div></div>	Engaged a third party expert to assist with target re-assessment against the SBTi framework and understand next steps.	<div></div>	Set new targets covering scope 1, 2 and 3. These targets are pending validation by the SBTi.	<div></div>	Work to develop a division-wide target is underway; targets are already in place at the business-level. UK Power Networks and Hong Kong Electric have both had their targets validated by the SBTi.	<div></div>	Set new targets covering scope 1, 2 and 3. These targets are pending validation by the SBTi.
Assess the pathway to net-zero.	<div></div>	Engaged a third party expert to help develop a net-zero transition pathway.	<div></div>	Work is underway to assess the pathway.	<div></div>	While a division-wide plan is still underway, nine of the Group's Infrastructure businesses have already committed to net-zero.	<div></div>	CKHGT has set a target to reach net-zero in operations (scope 1 and 2) by 2040. Recognising the importance of incorporating scope 3 also in this ambition, it will be further expanded to do so, and CKHGT will further seek validation by the SBTi on this long-term net-zero ambition.
Calculate scope 3 emissions.	<div></div>	Currently calculating its scope 3 footprint.	<div></div>	Calculated scope 3 emissions for the first time in 2021.	<div></div>	Scope 3 figures are calculated by some of the businesses and work is underway to expand this reporting.	<div></div>	CKHGT calculated its scope 3 footprint for the first time in 2021.
Report on progress using the Taskforce on Climate related Financial Disclosures (TCFD) framework.	<div></div>	During 2021, the Group developed its TCFD-aligned report. There is further work to be done	first TCFD-aligned report. TCFD gap analyses and work to align reporting at the division-level are also commonplace at the business level. to enhance this TCFD reporting by incorporating scenario analysis and calculating the financial impacts of climate change.					
2. Offer customers sustainable products and invest in and embrace innovation to achieve transformational impacts								
Assess and expand sustainable product and service offerings and communicate benefits to customers.	<div></div>	The Group has identified three key help drive: the net-zero transition;	areas of opportunity that it is delivering business solutions in and that it will continue to invest in as key value drivers, including solutions that a circular economy and sustainable sourcing; and a more inclusive and diverse world.					
Track the following Key Performance Indicators ("KPI"): <ul style="list-style-type: none">Revenue generated from sustainable business opportunities; andCAPEX spend on sustainability.	<div></div>	While the Group has studied its Taxonomies in development such as	sustainability-related CAPEX spend, further work will be completed to mature this analysis and align this work to the relevant regional the evolving European Taxonomy.					
3. Create great places to work								
Develop inclusion and diversity goals.	<div></div>	While inclusion and diversity is being addressing inclusion and diversity is	prioritised by all businesses, further work is to be completed to set division and Group-level goals. Detail on how each division is presented on pages 54-55, 68, 70-71, 118-119 and 148-149					
Track the following KPIs: <ul style="list-style-type: none">Gender split of employees in managerial positions;Gender split of employees in executive management;Gender split of newly hired employees; andAverage years employed by the company by gender.	<div></div>	Data collection embedded now in HR	data collection processes for tracking and developing improvement plans.					
Present action plans to track and improve employee engagement, short-term and long-term.	<div></div>	All business HR teams shared their	employee engagement plans with Head Office.					
4. Pandemic response								
Employees: Keep employees safe; provide employees with the tools and support to successfully work from home; support employee wellbeing. Customers: Protect the health and wellbeing of customers. Communities: Maintain focus to supporting healthcare services globally and the needs of the vulnerable.	<div></div>	While this work can never be described throughout this report.	as "completed", the Group ensured each division was dedicated to this aim. Detail on how each division is addressing this goal is discussed					
Other Group goals								
Build sustainability incentives plans by linking sustainability goals to performance metrics and compensations schemes.	<div></div>	In 2021, WINDTRE introduced a sustainability to performance	new plan to link 10% of management's short and long-term compensation to its 2030 sustainability objectives. Further work is underway to link objectives and incentive schemes across the Group.					
Develop a Group-wide sustainability employee engagement plan, enabling cross-business synergies, beginning with a global sustainability champions network.	<div></div>	A Group-wide global sustainability information regarding new objectives also held.	network was created in 2021 and was used as a way to encourage collaboration opportunities as well as to disseminate Group-level and plans. Awareness raising sessions from external experts on science-based target setting, TCFD reporting and inclusion and diversity were					
Every core business to have its own sustainability reporting which follows the Group's sustainability goals and priorities.	<div></div>	CKHGT will develop its first	Sustainability Report in 2022-2023 to complete the full spectrum of Group reporting.					
Roll out a Group-wide Sustainability Data Management System for enhanced active monitoring and preparation for externally-audited data.	<div></div>	In 2021, the Group selected FigBytes as	its chosen data management platform. The platform will be launched across the Group in 2022.					
Expand disclosures to meet criteria set out in key reporting frameworks (e.g. TCFD) and ESG rating agency frameworks.	<div></div>	Again, while this work will be an engage with ESG ratings agencies	ongoing process that cannot be marked as "completed" the Group is satisfied that it has continued to expand it's disclosures and actively which has resulted in performance improvement of the Group's ratings.					

● Completed ● Work underway ● Not yet started

Priority goal 1: Take action on climate change

The Group believes that urgent and sustained action is required to address the climate emergency and to meet the goal of the 2015 Paris Climate Agreement. With the current decade being critical, there is no choice but to accelerate action to limit global warming. Responding to climate change means not only addressing climate-related risks, but also opportunities. As the world transitions towards net-zero, the Group's businesses are positioning themselves to be at the forefront of helping its customers, communities, businesses and governments achieve their climate ambitions.

Targeting leading practice

In 2020, the Group identified four action plans for its business divisions to undertake during 2021 and 2022. Progress is summarised in Table 3. The ultimate aim of these actions is to ensure the Group is taking a science-aligned and leading practice approach to its climate strategy.

Using the findings from the work completed during 2021, the Group is prioritising developing a short-term and long-term Group-level target during 2022.

Division-level progress

The Ports division has been working to develop new short and long-term targets as well as develop a scope 3 footprint; this work will be completed during 2022. In the meantime, it has set in place global targets with a particular focus to scope 1 emissions, which account for 62% of total scope 1 and 2 emissions, including:

- Reduce diesel consumption per Twenty-foot Equivalent Unit ("TEU") by 30% by 2030 versus a 2020 baseline; and
- Reduce GHG emissions intensity (kgCO₂e per TEU) by 20% by 2030 versus 2020.

While the Ports division is currently working on its long-term climate transition plan, it is nevertheless positive about a net-zero future for its ports and has mapped out transition opportunities that are well underway.

During 2021, the Retail division worked alongside a carbon expert to develop its science-based targets, which are pending validation by the Science Based Targets initiative. These new targets include:

- Reduce scope 1 and 2 emissions by 50% by 2030, versus a 2018 baseline;
- Reduce scope 3 emissions from purchased goods and services and upstream transportation and distribution by 58% per dollar Economic Value Added by 2030, versus a 2018 baseline; and
- 33% of suppliers by GHG emissions covering purchased goods and services and upstream transportation and distribution will have science-based targets by 2027.

The Infrastructure businesses have already developed net-zero transition pathways which are summarised in Table 4. Work is underway to consolidate progress and plans to develop one set of division-wide targets.

CK Hutchison Group Telecom ("CKHGT") worked with a third party expert to develop its science-based targets, which are also pending validation by the Science Based Targets initiative. These targets include:

- Reduce scope 1 and 2 emissions by 50% by 2030, versus a 2020 baseline; and
- Reduce scope 3 emissions by 42% by 2030, versus a 2020 baseline.

Table 3: Snapshot of division-level progress against climate change actions













Actions	Ports	Retail	Infrastructure	Telecoms
Set a short-term target aligned to the science, ideally validated by the Science Based Targets initiative				
Assess the pathway to net-zero				
Calculate scope 3 emissions				

Table 4: Infrastructure net-zero targets

Business	Targets
Australian Gas Infrastructure Group	10% renewable gas by volume in distribution networks by 2030; 100% renewable gas by volume by 2050 at the latest and 2040 as a stretch target.
Dutch Enviro Energy Holdings B.V. (which owns AVR-Afvalverwerking B.V. (AVR))	Achieve net-zero in operations by 2050.
ista	Achieve net-zero in scopes 1, 2 and selected scope 3 by categories 2030.
Northumbrian Water	Achieve net-zero in operations by 2027.
Northern Gas Networks	Achieve net-zero in operations by 2031 (excluding gas shrinkage) and net-zero across the value chain by 2050.
SA Power Networks	Achieve net-zero in operations by 2035.
UK Power Networks	Achieve net-zero for directly controlled operational emissions (excluding network losses) by 2028.
Wales & West Utilities	Deliver a net-zero ready gas network by 2035.
HK Electric	Achieve carbon neutrality before 2050.

CKHGT has committed to net-zero in operations (scope 1 and 2) by 2040. It will also be working to incorporate scope 3 emissions into this long-term target, as well as having it further validated by the Science Based Targets initiative.

During 2021, CKHGT worked with a carbon consultant to develop its first scope 3 footprint. With scope 3 emissions accounting for 74% of its footprint, and 84% of total scope 3 emissions attributable to purchased goods and services and capital goods, this spotlights the importance of supplier engagement, particularly with handset suppliers.

GHG emissions reduction performance

In 2021, the Group reduced its total scope 1 and 2 emissions by 10.3% versus 2020, and 17.8% versus 2018. These savings have been enabled by efforts in generating and procuring renewable and other clean energy, continuing to phase out coal-fired power generation, transitioning to sustainable transportation and implementing energy efficiency measures.

The Retail, Ports and Telecommunications divisions, however, all experienced increases in their scope 1 and 2 emissions in 2021 versus 2020 (5.4%, 5.4%, and 1.3% respectively) due to retail stores reopening following long periods of lockdowns, supply chain pressures leading to above-average increases in port throughput, and an increase in traffic needs of the network during the pandemic with more people working and connecting from home. While there is expected stabilisation in 2022, these increases highlight the importance of measures that can help decouple GHG emissions from business growth, for example the combined need of utilising electric vehicles with 100% renewable electricity that keeps GHG emissions at zero no matter the extent of business activity.

Accounting for 82% of total scope 1 and 2 emissions, the Infrastructure division is the most critical part of its overall net-zero transition pathway. Nevertheless, the Ports, Retail and Telecommunications divisions are in their own right large businesses with sizeable footprints, which also require maximum focus.

Figure 5: Scope 1 and 2 GHG emissions performance (tCO₂e)

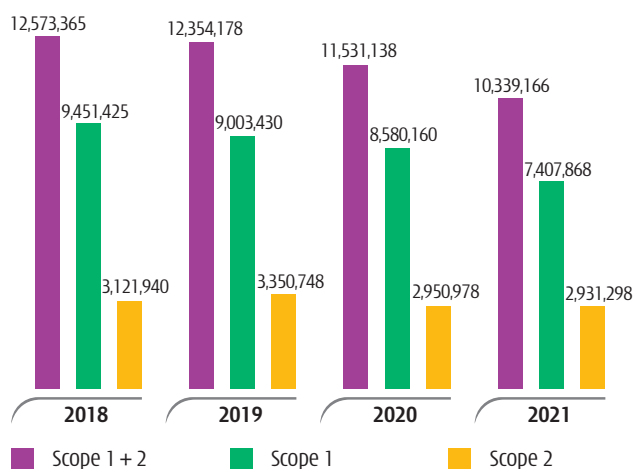
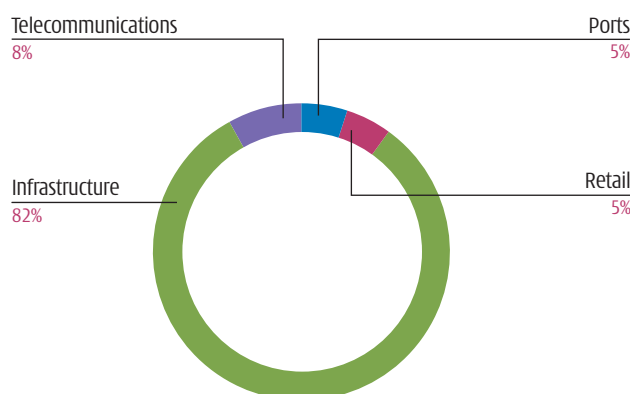


Figure 6: Group breakdown of scope 1 and 2 emissions



Net-zero transition opportunities

While the Group is still undertaking a more detailed analysis of its division-level targets and plans before finalising its Group-wide targets, it nevertheless has in place a strategy to address its most important areas of focus.

The Group has identified 10 net-zero transition opportunities based on current business expectations and structure for achieving transformational change over the long-term, addressing both adaptation and mitigation including :

1. Renewable and other clean energy;
2. Transitioning high-carbon assets;
3. Sustainable transportation;
4. Energy efficiency;
5. Circular economy & design;
6. Climate adaptation;
7. Finance and investment;
8. Supply chain engagement;
9. Collaboration, partnerships & advocacy; and
10. Carbon offsets.

Aside from influencing the impact of the Group's own footprint, the Group's businesses are also playing pivotal roles in enabling significant GHG emissions reductions in other industries and growing value-creating business solutions to address the net-zero transition.

The overarching approach the Group has taken is to not wait for every issue to be resolved and for every term to be defined before setting out its climate transition action plan, but instead ensure that it advances significantly every year and that it is transparent to all stakeholders as it progresses.











The Group is also tracking spending in these areas to ensure sufficient investment is dedicated to enabling progress.

Interconnectivity with other sustainability challenges

In considering the Group's approaches to net-zero, it also acknowledges climate change's interconnectivity with other environmental challenges such as biodiversity loss and environmental pollution. These must be addressed together to create the most meaningful progress.



It is important that the opportunities presented by a net-zero future are open to everyone. Given the sheer scale of change that is needed, it is fundamental to address new forms of inequality that may arise. Studies show that public understanding of low-carbon technologies is generally low, particularly among vulnerable customers, which may create new forms of exploitation. To address this, the Group's businesses are working closely with regulators and governments, and in doing so helping to engender public awareness and trust in net-zero, a critical component to meeting decarbonisation ambitions.

Table 7: Net-zero transition opportunities

Transition opportunity	Strategies
 Renewable and other clean energy	<ul style="list-style-type: none"> Invest in and grow the Group's renewable energy portfolio. Transition gas networks to hydrogen. Connect market-leading levels of renewable energy to the grid. Increase the procurement of renewable electricity. Adopt carbon capture and storage where relevant to waste-to-energy operations.
 Transitioning high-carbon assets	<ul style="list-style-type: none"> Phase out coal-fired power generation globally by 2035.
 Sustainable transportation	<ul style="list-style-type: none"> Scale up electric and hybrid-electric vehicles and infrastructure. Lead the way in being first-adopters of hydrogen vehicles and equipment.
 Energy efficiency	<ul style="list-style-type: none"> Exhaust all feasible options for energy efficiencies. Embrace digitalisation and innovation to transform distribution networks, increase grid flexibility and decrease distribution losses. Be a leader in innovation in 5G, IoT applications and smart city solutions.
 Circular economy & design	<ul style="list-style-type: none"> Reduce, reuse and recycle all forms of waste. Design products and systems with circular economy principles in mind.
 Climate adaptation	<ul style="list-style-type: none"> Protect the Group's people and assets and be ready for a changing climate. Conduct periodic climate risk assessments of high-risk assets. Protect biodiversity to restore healthy ecosystems and further strengthen adaptation.
 Finance and investment	<ul style="list-style-type: none"> Continue to align capital expenditure in line with a net-zero pathway.
 Supply chain engagement	<ul style="list-style-type: none"> Further develop supplier engagement policies. Develop scope 3 emissions reductions targets.
 Collaboration, partnerships & advocacy	<ul style="list-style-type: none"> Partner with peers, customers, government and other relevant organisations to accelerate the transition.
 Carbon offsets	<ul style="list-style-type: none"> Reducing the Group's direct carbon footprint is the first priority. Carbon offsets can help to neutralise residual emissions attributable to the Group that are not possible to eliminate.

It is important to note that the potential scale of impact is based on the Group's current business structure, availability of opportunities and technologies, as well as anticipated future policy environments, which are all subject to change from forces outside of the Group's control. The Group will endeavour to provide updates as these evolve and as new opportunities become available.

1. Renewable and other clean energy

Renewables are at the centre of the net-zero transition. Exceptionally high capacity additions are becoming the new norm, with renewables expected to account for [90% of new power capacity](#)  expansion and [30% of electricity generation](#)  globally in 2021, according to the International Energy Agency.

While renewable energy is derived from sources that can naturally replenish themselves, such as from the wind and sun, clean energy more broadly encompasses all carbon-eliminating energy sources that also prevent pollution, including adopting technologies like carbon capture and storage. While renewable energies may be the preferred option in terms of impact, much work is to be done before they can be solely relied upon. Further, the enormity of the climate crisis is great enough that there is no time in the short-term to wait for silver bullet solutions; all available technology must be availed of in order to enable the transition.

As a generator, facilitator and consumer of renewable and other clean energy, this opportunity is the most significant net-zero transition opportunities for the Group.

In terms of renewable energy generation, this primarily relates to the Group's Infrastructure division which is taking significant steps in both generating renewable and other clean energy, as well as investing in new opportunities to grow this portfolio.

In 2021, the Group was responsible for generating 6,405GWh of renewable and other clean energy which enabled over five million tonnes of avoided CO₂ emissions, or the equivalent of over taking one million petrol-powered passenger cars off the road for an entire year.

Victoria Power Networks installing rooftop solar panels



The Group also plays a significant role in facilitating the renewable energy transition through enabling renewable energy grid connections via the Group's electricity distribution networks. A critical component of this is the deployment of distributed energy resources which are small-scale electricity supply or demand resources, such as rooftop solar photovoltaic units that are interconnected to the electric grid. UK Power Networks, SA Power Networks, Victoria Power Networks and Hong Kong Electric have connected over 14GW of distributed energy resources to the grid, with plans to significantly grow this in the short-term. For example, SA Power Networks has the highest penetration of distributed solar of any gigawatt-scale energy system in the world and it is working on doubling its solar capacity in the next five years.

Hydrogen is considered a significant future opportunity to the Group, particularly to the gas networks that are actively piloting projects and readying their networks for the future of hydrogen.

Australian Gas Infrastructure Group delivered Australia's first project that produces green hydrogen for blending with natural gas at volumes of up to 5% and supply to nearby homes via the existing gas network. Its next project looks to blend up to 10% renewable gas to supply around 770 homes and businesses throughout an entire city's existing gas network, another Australian-first. With its partners, Northern Gas Networks has launched the world's first 100% hydrogen testing facility. It is also piloting a 20% blend of hydrogen in a local gas supply in the village of Winlaton in the North East of England.

In an industry-first partnership, UK Rails has signed a Memorandum of Understanding with Alstom, Britain's leading train manufacturer and maintenance provider. Through this, UK Rails will explore the technical and commercial feasibility to build the UK's first-ever, brand-new hydrogen fleet. In 2021, UK Rails entered into an agreement with H2 Green, a hydrogen network operator, with a view to develop low-cost and reliable green hydrogen supply solutions for the UK railway. This partnership will help determine the production and refuelling infrastructure required to support wide-scale deployment of hydrogen-powered rolling stock fleets.

The Ports division is also actively entering this space through the work underway at Freeport East (centred on two of its ports) and its aims to be a centre of excellence for green hydrogen and wind power generation. At its peak, the project is expected to produce 1GW of green hydrogen, 20% of the 5GW target in the UK's Ten Point Plan for a Green Industrial Revolution. Among many other uses, the hydrogen produced will be used to power port infrastructure and equipment.

Table 8: Renewable and other clean energy generated by the Group's businesses


Renewable and other clean energy source	Installed capacity (MW)	Generation in 2021 (MWh)	Emissions avoided p.a. (tCO ₂ e)
Biogas*	435	2,092,387	2,735,243
Solar	7	11,955	1,865
Wind	182	485,380	356,291
Green hydrogen	1	628	272
Waste coalmine gas	298	1,413,133	1,224,327
Waste-to-energy**	170	532,000	261,700
Renewable heat and industrial waste heat	390	1,870,000	422,000
Total	1,483	6,405,483	5,001,698

Note:

* Biogas produces both electricity and renewable natural gas. The MW's installed capacity and MWh's generated in 2021 includes the renewable natural gas converted from MMBTU's.

** 54% of the energy output was classified as renewable (biomass origin) and was certificated with Guarantees of Origin.

Renewable electricity procurement

Aside from generation, renewable electricity procurement is also important under this opportunity. The Group's preference for renewable electricity procurement follows the technical screening criteria set out by [RE100](#) , the global initiative which brings together the corporate sector in driving 100% renewable electricity uptake. In order of preference, these criteria include:

1. Self-generation from owned facilities (on or offsite);
2. Purchase from on-site installations owned by a supplier;
3. Direct line to an off-site generator with no grid transfers;
4. Direct procurement from offsite grid-connected generators e.g. power purchase agreement ("PPA");
5. Green electricity products from an energy supplier (e.g. Green Tariffs);
6. Unbundled energy attribute certificate ("EAC" or "certificates") purchase;
7. Default delivered renewable electricity from the grid, supported by certificates; and
8. Default delivered renewable electricity from a grid that is 95% or more renewable and where there is no mechanism for specifically allocating renewable electricity.

While many of the higher order options do not exist for all in-country, the Group encourages its businesses to start with the available options and work towards higher impact options as more possibilities become available. Currently only 20% of electricity is renewable electricity, with the majority of procurement in Europe. Nevertheless, there is ongoing progress being made towards the

preferred options. For example, Northumbrian Water's 1,886 sites are all powered by renewable electricity. This means that 87,000 tonnes of CO₂ emissions are eliminated every year, 30% of which is powered by a 10-year PPA with the Race Bank offshore wind farm off the coast of Norfolk.

The Group is exploring the potential for collaborative energy procurement through combined PPAs across core businesses enabling new renewable energy being added to the grid, while ensuring a stable and long-term supply of green energy and driving down costs for the Group through economies of scale.

The Group has also hired a Head of Sustainability Services Products and Services with deep expertise in energy markets, renewable energy and energy management. Part of the CKH Innovations Opportunities Development team, a centralising function for innovation and cross-fertilisation of opportunities across the Group, this role has the specific aim of identifying collaboration opportunities and disseminating knowledge of renewable energy markets within the Group.

2. Transitioning high-carbon assets

As of 2021, the Group's businesses in OECD countries have fully phased out coal-fired generation and the Group is committed to phasing out coal-fired generation in remaining non-OECD countries by 2035. To date, coal-fired generation installed capacity has reduced from 53% in 2016 to 32% in 2021.

Table 9: Coal to gas conversion plans



Following the commissioning of a gas-fired unit (L10) in 2020, HK Electric took another major step forward in its transition from coal to gas-fired generation with the successful synchronisation of another new gas-fired unit (L11) in November 2021. HK Electric will also commission another new gas-fired unit (L12) in 2023 and gradually phase out the remaining coal-fired units by the early 2030s.



The 800 MW Sheerness Generation Station fully phased out coal-fired power generation in 2021, which will effectively reduce GHG emissions from Canadian Power's 200 MW stake by 45-50%.

3. Sustainable transportation

While this opportunity applies across all businesses, this is most impactful to the Ports division where transportation, including both mobile and stationary vehicles and equipment, accounts for 80% of a typical port's scope 1 and 2 emissions footprint.


While transportation needs vary from port to port, important equipment necessary across all ports is described in Table 10, including how the Group is investing in converting this equipment from diesel to electric and hybrid alternatives (with a preference for electric).

In a port environment, converting a brownfield site from diesel to electric is a lengthy process which takes significant time, planning and investment to trial and roll out the equipment and supporting infrastructure including the maintenance support, while maintaining ongoing operations. Further, often electric and hybrid alternatives are not yet fully offered in the market, which is a regular barrier for many of the Group's operations. While significant progress has still been made, further leaps in technology are required, as well as a consideration to lead-times and depreciation cycles. Table 10 highlights where the Ports division has been also scanning the market and acting upon options being offered by the market.

Table 10: The Ports division's near-term sustainable transportation rollout

Equipment	Total units	Total electric	Total hybrid units	Capital expenditure ("CAPEX") committed and planned for 2021 & 2022
Rubber-tyred gantry cranes (RTGC)	1083	382	178	Thailand: 8 electric RTGCs Pakistan: 11 electric RTGCs UK: 17 electric RTGCs Egypt: 12 hybrid RTGCs Mexico: conversion of 20 diesel to electric RTGCs; 3 new electric RTGCs; 3 hybrid RTGCs Poland: conversion of 4 diesel to electric RTGCs Panama: conversion of 15 diesel to electric RTGCs = US\$110 million of CAPEX investment
Straddle Carriers (SC)	226	0	8	Netherlands: 20 hybrid SCs Bahamas: 10 hybrid SCs Spain: 6 hybrid SCs = US\$37 million of CAPEX investment
Automatic Guided Vehicle (AGV)	362	0	85	Netherlands: 77 hybrid AGV = US\$49 million of CAPEX investment
Reach-stacker (RS) and Empty Container Handler (ECH)	418	0	0	The Ports division is scanning the market for options. More recently some electric and hybrid versions have been launched and the Group is evaluating these products.
Internal tractors	1639	6	0	Until recently there were no viable alternative options other than diesel for port-appropriate tractors. However, with recent market launches, a large-scale global rollout of electric tractors is underway including the following short-term plans: UK: 48 electric trucks. Thailand: 9 manual electric trucks & 9 autonomous electric trucks. Oman: 14 electric autonomous trucks. Mexico: 18 electric trucks. = US\$14 million of CAPEX investment

The scale of impact of this opportunity is of course inherently intertwined with the uptake of renewable electricity, where the full positive impact is only achieved if the electrons supplying the electricity are generated from zero-carbon energy sources. This therefore highlights the need to drive progress simultaneously in both the electrification of infrastructure as well as striving for higher levels of renewable electricity.

The Group's businesses are not only rolling out their own electric fleets but also enabling the widescale rollout of electric vehicles and helping to solve challenges that will come with millions of new electric vehicles and chargers being connected to the network. UK Power Networks' forecasts suggest between 1.6 and 2.7 million electric vehicles could be powered through its three networks by 2028. To meet this rapid increase, UK Power Networks is innovating to meet the technical challenge of an unprecedented large-scale shift to electric transport. UK Power Networks' comprehensive [Electric Vehicle Strategy](#)  outlines the partnerships underway to develop, test and deliver technical and commercial solutions that facilitate the rapid uptake of electric vehicles and the whole systems approach planned to maximise the utilisation of its existing electrical infrastructure.

The Group is also playing an important role in the modal shift to rail. The European Commission's Sustainable and Smart Mobility Strategy, published in December 2020, calls for "decisive action to shift more activity towards more sustainable transport modes", aiming to increase rail freight transport by 50% by 2030, among other goals.

Class 331 Electric Regional Train owned by UK Rails


The favourable geographical location of the Ports division's terminals means that Hutchison Ports is well placed to develop multi-modal feeder hubs and railway networks connecting containers to and from its seaports to more inland destinations.

A key part of Hutchison Ports BEST's strategy when taking over and transforming its terminal in Barcelona, has been to make it one of the gateways to the European market by leveraging train lines and building its surrounding hinterland. Rail traffic at the terminal has increased significantly in recent years, going from 3% of full import and export container traffic to 21% in 2021, saving an estimated 37,614 tons of CO₂ emissions versus road transport. Hutchison Ports ECT has also significantly invested in becoming an established starting point and terminus for rail transport in Europe including a 16-track rail terminal.

Facilitating the modal shift is central to UK Rails' strategy. With over 75% of its rolling stock already electric, as well as new innovations being developed in hydrogen and battery technologies to increase the potential for zero-emission trains, UK Rails is well-positioned to be a partner of choice along the journey to net-zero. Its Revolution Very Light Rail, developed jointly by UK Rails and a consortium of organisations, is also being developed to help boost connectivity and mobility effectively in remote and rural areas due to greater ease of track installation in comparison to setting traditional rail tracks.



4. Energy efficiency

According to the International Energy Agency, energy efficiency represents more than [40% of the GHG emissions abatement](#)  needed by 2040, and that currently existing cost-effective technologies are sufficient to double global energy efficiency. Moving towards a sustainable transition pathway means not waiting for technology solutions further down the track but also focusing on how the existing system can be transformed.

One of the greatest challenges an energy network must face with respect to GHG emissions reduction relates to inherent losses in energy systems, termed "losses" or "leakages". While there are many efforts the Group's gas and electricity network distribution businesses take, such as ongoing pipe and mains replacement, technical losses are an unavoidable consequence of energy distribution. Further, the extent of GHG emissions generated will also rely on how the throughput energy is generated, be it from fossil-fuel based or renewable sources. While the decision of throughput energy for the Group's pure distribution networks is outside of its direct control, they are taking every available step to ready their networks for a transition to renewable and other clean energy sources.

Implementing demand-side flexibility is one way to address the challenge of energy losses by enabling customers to reduce or shift their electricity usage during peak periods in response to time-based rates or other forms of financial incentives. This flexibility also enables electricity distribution networks to use this resource as an option for balancing supply and demand, reducing losses, and ensuring a secure, sustainable and affordable electricity system. It can help soften peaks in demand and fill in the troughs, especially at times when more renewable energy is available. UK Power Networks has led in this approach to flexibility since 2018, when it became the first network operator in the UK to commit to a radical "Flexibility First" approach to cater for new connections, which has saved connecting customers GBP72.6 million over the period of 2016-2020.

Digital technologies are transforming the energy efficiency landscape for the Group's businesses. In recent years, energy management systems have also become smarter, integrating external data sources such as weather conditions and traffic patterns. Leveraging artificial intelligence, these advanced systems can forecast energy demand as well as improve response capabilities.

The Telecommunications division is addressing this opportunity through its ongoing development of 5G connected technologies, which are enabling vast efficiencies across industries. For example, the Telecommunications division is collaborating with Hutchison Ports Port of Felixstowe to deploy 5G to enable the remote-controlled operation of port equipment which results in operational efficiencies, GHG emissions reduction and a safer work environment.

Through ista's data-based suite of digital solutions for smart property management, ista enables residents and owners of buildings to take control of their energy consumption. In Germany alone, 3.7 million tonnes of CO₂ are saved every year thanks to reductions made in the annual heating cost bills enabled through ista's solutions. The Group's businesses are also benefiting from ista's services. For example, A.S. Watson UK has partnered with ista to undertake energy audits and training to better identify energy efficiencies and behaviour changes in-stores, distribution centres and offices. It is also leveraging ista's "MinuteView" platform which assists in forensically examining energy management and identifying opportunities for energy consumption reduction.

In terms of facilities management, common energy management solutions being availed of across the Group include lighting upgrades to energy-efficient LED lighting, constructing or retrofitting facilities to be more energy efficient, implementing energy management solutions for active monitoring and procuring equipment certified as energy efficient.

5. Circular economy & design

While circular economy approaches are most commonly associated with reducing waste and driving greater resource productivity, it is also a vital lever in the net-zero transition. By eliminating waste, the GHG emissions associated with the production of those previously produced materials are eliminated. And by keeping products and materials in use, embodied energy is retained instead of producing new materials and products, which generates even more greenhouse gases.

As the largest global health and beauty retailer, circular economy approaches are fundamental to A.S. Watson's sustainability objectives. As part of becoming a signatory to the Ellen MacArthur Foundation's New Plastics Economy Global Commitment, the first in its sector to do so, it has committed to:

- 100% of plastic packaging being reusable, recyclable, or compostable by 2025 (including Own Brand product packaging, eCommerce parcels and in-store carrier bags). Status: 46.6% achieved.
- 20% recycled plastic content in Own Brand packaging by 2025. Status: 6.8% achieved.

The Retail division is also helping customers reduce disposable packaging through its reuse and refill programmes. Examples include:

- Working with brand partners such as Procter and Gamble and L'Oréal to introduce in-store product take-back and recycling schemes for hard-to-recycle packaging;
- Introducing refill counters and providing options for customers to bring their own containers to supermarkets instead of using disposables;

- Launching a city-wide plastic bottle container collection programme in Hong Kong by installing reverse vending machines in public spaces to encourage the public to recycle more; and
- Collecting used laptops from customers and the public after which they are repaired and donated to low-income families.

The Infrastructure division's role in contributing to a circular economy is best exemplified by its waste management and processing facilities. EnviroNZ has been scaling up its organics infrastructure so it can play a bigger role in New Zealand's fight against both organic waste as well as climate change. The business achieved a milestone in October 2021, with the completion of a three-year project to expand its Hampton PARRC organics processing facility. It has doubled its capacity to process green waste and food scraps from its customers and can now handle up to 24,000 tonnes per annum. Rather than this waste ending up in landfill, it is now turned into nutrient-rich compost for residential and commercial use, enabling the reduction of approximately 3,500 tonnes of CO₂ emissions.

AVR has used its expertise in smart incineration to turn 2,266,000 tonnes of unrecyclable waste into valuable new resources used by its surrounding community including process steam, district heating, and electricity, among other materials, all of which enabled 926,700 tonnes of avoided CO₂ emissions in 2021.

Other highlights from the division include:

- ista focuses on the full lifecycle of its meters and heat cost allocators integrating circular economy approaches into every aspect from design, to product takeback and recycling. Its leasing model means that together with its in-house expertise to ensure these products are maintained for their maximum lifecycle, the business also ensures they are recycled through specialist, certified recyclers;
- UK Rails is working on a new business solution which looks to extend the life of assets by repurposing passenger trains into freight-carrying units. In addition, end-of-life trains can be up to 92% recyclable, and once a train needs to be scrapped, UK Rails works with carefully vetted suppliers to ensure maximum recyclability;
- Northumbrian Water has committed to creating zero avoidable waste by 2025. This will mean eliminating, re-using or recycling 90% of waste from its operations, and working with partners to contribute to the circular economy in their regions; and
- Northern Gas Networks has collaborated with the industry to drive new standards and procedures for recycling construction waste created during the installation and maintenance of new pipes. Now less than 0.14% of its construction spoil is going to landfill and it has reduced its use of virgin aggregate by over 76%.



A refill station at one of Watsons Hong Kong stores

The Telecommunications division has implemented take-back programmes across its operating markets. For example, 3 Sweden's take-back programme enables customers to return their used devices by free return post, which are then cleared of data and refurbished to be on-sold as second-hand phones. By using the take-back programme customers are given discounts on their subscriptions or can choose to donate the discount savings to the Swedish Childhood Cancer foundation.

6. Climate adaptation

While needing to do everything possible to eliminate GHG emissions and slow the pace of global warming, it is also essential to adapt to the unavoidable consequences of climate change so the Group's employees and assets are protected. Adaptation therefore means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage. Interlinked with this is the importance of biodiversity protection as protecting and restoring healthy ecosystems can further strengthen adaptation (and mitigation) capabilities.

In 2021, to further assess the physical impacts of climate change, Hutchison Ports commissioned a global climate risk assessment of its ports. Each port was assessed against a set of climate risks looking at both severity and likelihood of the event occurring. The assessment resulted in a hierarchy of most exposed ports by type of climate risk. A shortlist of ports have been identified for further detailed assessment given the potential for multiple climate hazards with elevated risk factors over the long-term.

With similarly large assets to be protected from the elements, the Infrastructure businesses have also been taking proactive steps to both further understand and protect their assets against the impacts of climate change. Northumbrian Water has delivered a multi-award winning scheme in Killingworth, North Tyneside, which worked to reduce flood risk in times of heavy rain protecting thousands of homes in the surrounding areas, as well as improving water quality and the surrounding biodiversity.

Looking at the effects of storms, UK Power Networks' Storm Resilience project developed an advanced tool that combines network data, historic fault data and live weather forecasts to predict the number of faults that could occur in an area of the network. This project is examining how the business handles storms to a new level by combining data science with improved customer service by ensuring enough engineers are on standby when severe weather is predicted.

The electricity distribution businesses in Australia are particularly at risk from bushfires which are exacerbated by rising temperatures. They therefore invest millions every year to reduce the risk of bushfire and loss of power supply in communities. Activities include undergrounding power lines and installing high technology covers over power lines to protect them from extreme weather. To further reduce fire risk, Victoria Power Networks uses advanced Light Detection and Ranging technology to continually improve the accuracy of scanning and detection of vegetation growing near power lines. Rapid Earth Fault Current Limiters are also being installed in substations, providing additional protection for 15,500 kilometres of its network. Acting like a giant safety switch, this work provides additional protection to the community by reducing voltage levels within milliseconds to mitigate fire risk if a tree strikes power lines or if lines hit the ground.



Powercor installation of Rapid Earth Fault Current Limiters

7. Finance and investment

Finance and investment is critical to addressing climate change because large-scale investments are required to significantly reduce GHG emissions in line with the goals set out by the Paris Climate Agreement, as well as adapt to the current and future effects of climate change.

Studies from the World Bank estimate the world would need to make infrastructure investments to the tune of [US\\$90 trillion by 2030 to transition to the green economy](#). However, it also found that investment unlocks significant economic opportunities with every investment of US\$1, on average, yielding US\$4 in economic benefits.

The Group looks to continue to play a leading role both by evolving strategies in its existing businesses and by investing in the critical new infrastructure that is needed to create the net-zero energy systems of tomorrow. This investment strategy has been identified as one of four key long-term development strategies for the Infrastructure division and is exemplified by Canadian Power's acquisition of two wind farms in Okanagan in June 2021, marking Canadian Power's entry into renewable energy generation.

In 2021, the Group issued its debut Green Bond of EUR500 million guaranteed notes due 2033 with its first allocation and impact report to be released before November 2022. The Group's Sustainable Finance Framework and second party opinion is also available [here](#).

8. Supply chain engagement

Analyses thus far of division-level carbon footprints reveal that scope 3 emissions account for between 70%, and sometimes in excess of 90%, of a business' total carbon footprint, with purchased goods and services from suppliers counting for a dominant source of scope 3 emissions. The businesses are therefore continuing to add and assign additional weight to sustainability criteria in their procurement policies and processes, among other supplier engagement opportunities.

The Group is guided by its overarching Supplier Code of Conduct, but this is further developed at the business-level where detailed direction is given to suppliers that is relevant to their industries and geographies.

The Retail division dedicates significant resources to ensure that the thousands of products it puts on its store shelves are responsibly sourced and manufactured. During 2021, 584 factories were audited under A.S. Watson's sustainable supply chain programme. It also implemented a new Supplier Code of Conduct including consistent expectations for minimum standards of ethical, social and environmental practices. Lack of support or violations of the Code will result in consequences as severe as terminating the trading relationship or suspending such operations until compliance is achieved.

Partnering with supply chain expert organisations and helping to upskill suppliers and support them in improving practices is important to the Group. In 2021, Wales & West Utilities, one of the Group's Infrastructure businesses, became a member of the [Sustainability Supply Chain School](#) providing its supply chain partners with free learning opportunities across a wide range of sustainability topics. UK has recently partnered with EcoVadis, the global leader in independent supply chain sustainability ratings, to support its understanding of its supply chain practices across a broad range of sustainability topics.

9. Collaboration, partnerships and advocacy

Transformational impact does not happen in a silo. Across the core businesses, the Group is working with customers, peers, regulators, governments, NGOs, academia and others to drive innovation and promote collaboration in advancing the net-zero transition. Some of these impactful partnerships are outlined in Table 11.

While partnering with external organisations ensures the Group is getting access to the best advice and also sharing its expertise with others to accelerate impacts, the Group equally has a wealth of internal expertise that enables significant opportunities for collaborations both within and across divisions; examples of such collaborations are explored throughout this Report.

Table 11: External partnerships to advance net-zero

	<p>The Port of Felixstowe is working with a consortium of partners to develop Freeport East into a green hydrogen hub for the UK, including Felixstowe Dock and Railway Company, EDF Energy R&D UK Centre Ltd, NNB Generation Company (SZC) Limited and Cranfield University. In 2021, the Port of Felixstowe was announced as one of the beneficiaries of the Department for Transport's Clean Maritime Demonstration Competition which will include a study detailing how Freeport East can become both a net-zero port and a net-zero energy hub for third parties and adjacent region.</p>
	<p>A.S. Watson is a member of the New Plastics Economy Global Commitment, led by the Ellen MacArthur Foundation, an organisation widely considered as the foremost thought leader in building a circular economy.</p>
	<p>Wales & West Utilities and Northern Gas Networks are part of Gas Goes Green, a collaborative industry programme that aims to transform the UK's network into a world-first net-zero gas grid.</p>
	<p>Australian Gas Infrastructure Group is a founding member of the Australian Hydrogen Centre which brings together industry and government to deliver detailed feasibility studies of blending 10% green hydrogen into towns and cities, and ultimately a 100% renewable gas future.</p>
	<p>In 2020, Northumbrian Water joined with water utilities across the UK to launch a plan to deliver a net-zero water supply for the UK by 2030, saving an estimated 10 million tonnes of GHG emissions.</p>
	<p>SA Power Networks collaborates closely with the Australian Government to realise its aim of having 100% renewable electricity by 2030. To achieve this aim requires a whole-systems approach working closely also with the Australian Energy Market Operator, the state's transmission network operator, Electranet, among other technology partners such as Tesla where it is collaborating to develop the world's largest Virtual Power Plant.</p>
	<p>The Telecommunications division is an active member of the GSM Association's ("GSMA") Climate Action Working Group which includes operators from across the industry that are working together to move the mobile industry towards net-zero carbon emissions by 2050 at the latest, and a member of the Circular Economy for Devices working group which is seeking to promote circularity across the devices value chain.</p>
	<p>3 Ireland signed up to the Business in the Community Low Carbon Pledge along with over 60 of the largest businesses in Ireland committing to setting science-based targets by 2024.</p>

The Li Ka Shing Foundation

Another source of collaboration and innovation for the Group is its access to the extensive philanthropic network and portfolio of innovative companies in which early stage investments have been made by the Li Ka Shing Foundation through Horizons Ventures. Mr Li Ka-shing, the Group's founder and Senior Advisor, is well known as a leading investor in innovation and disruptive technologies. Over time, the Li Ka Shing Foundation has developed one of the world's most extensive portfolios of investments that address many of the pressing sustainability challenges of today. Among many

investments, the Li Ka Shing Foundation has been a significant backer of the following start-ups that seek to address challenges in the net-zero transition:

- ZeroAvia, working to develop zero-emissions aviation;
- Syzygy Plasmonics, developing a platform for cost-efficient localised production of green hydrogen; and
- Soil Carbon Co, developing technology to increase crop yields as well as the carbon capture and sequestration associated with major grain crops.

The Group partners with portfolio companies sponsored by the Li Ka Shing Foundation to use its business to act as incubators and spring boards for these innovations, for example, distributing Impossible products and Perfect Day ice cream through PARKnSHOP.

10. Carbon offsets

The Group's current focus is not to purchase offset credits as a first step in reducing GHG emissions, but instead focus first on taking all available steps to reduce the Group's direct GHG emissions footprint. Carbon offsets are utilised where it is not able to directly mitigate emissions. Where this strategy is implemented at the business level, the Group will also keep track of international standards and industry practices to ensure it is aligned with leading practice approaches to the purchase of offset credits.

Priority goal 2: Offer customers sustainable products and invest in and embrace innovation to achieve transformational impacts

The Business & Sustainable Development Commission estimates that sustainable business models in support of the SDGs could open up economic opportunities worth up to [US\\$12 trillion](#)  and increase employment by up to 380 million jobs by 2030. This therefore suggests that business opportunity and impact on the SDGs are not mutually exclusive, but rather they go hand in hand. In other words, business cannot thrive unless people and planet thrive.

The Group is increasingly observing that consumer trends are changing in favour of more sustainable products and services. While there are also many external consumer studies that prove this, the Group's own Retail brands' customer surveys also evidence how their customers are prioritising sustainability. For example Superdrug's 2021 customer survey, which measures brand values and customer connection, revealed that 47% of respondents consider how ethical a beauty or personal care brand is before buying its products, serving as an important reminder to the significance of communicating the business' "Doing Good Feels Super Good" sustainability branding.

While there are many ways in which the Group helps to address the sustainability concerns of its customers, there are three particular opportunities in which it is growing business solutions, including those that help drive:

1. The net-zero transition;
2. A circular economy & sustainable sourcing; and
3. A more inclusion and diverse world.

Solutions to drive the net-zero transition

As already explored in detail in the previous section, the Group is at the forefront of delivering innovation and breakthrough progress that is helping its customers drastically cut their GHG emissions. While these efforts are serving to reduce both their direct and indirect carbon footprints, the net-zero transition is a significant opportunity which can act as a lens for new product development and value creation. Aligned to the 10 net-zero opportunities discussed in the previous section, Table 12 summarises how the Group's businesses are investing in new business models and solutions in order to be brands of choice.

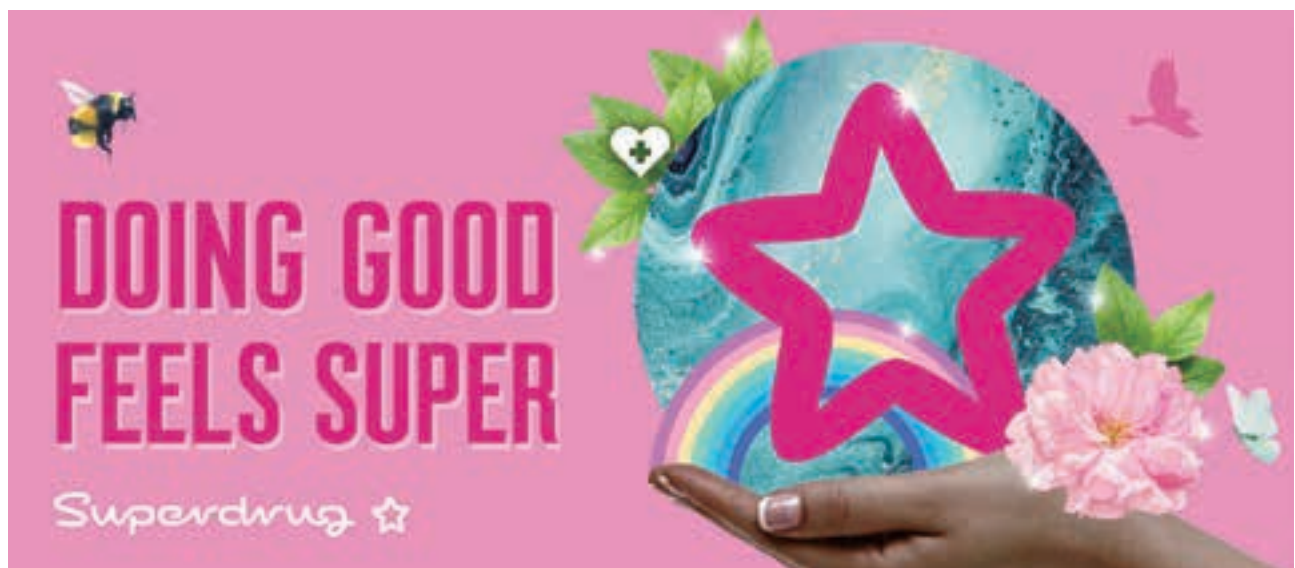


Table 12: Summary of business opportunities

Renewable and other clean energy generation	<ul style="list-style-type: none"> Freeport East, centred upon the Port of Felixstowe and Harwich International Port, aims to be a green hydrogen hub and net-zero port, helping its customers to achieve zero emissions while docked at the port. Northern Gas Networks, Wales & West Utilities and Australian Gas Infrastructure Group are among the first to deliver real-world trials to prove how the existing gas networks in the UK and Australia can be converted safely and affordably to 100% hydrogen. They have long-term aims to transition their gas networks to zero-carbon networks. The Group's networks are innovating to enable industry-leading levels of renewable energy to be connected to the grid through distributed energy resources. In addition to its commitment to net-zero by 2027, Northumbrian Water is already the first water company in England to successfully turn 100% of its sewage sludge into renewable energy through advanced anaerobic digestion. EDL and AVR helped their customers to abate close to five million tonnes of GHG emissions in 2021 across a large portfolio of landfill gas, waste coal mine gas and waste-to-energy sites globally. 	          
Sustainable transportation	<ul style="list-style-type: none"> To achieve its aim to be the preferred partner for a sustainable supply chain, Hutchison Ports is delivering an expansive electrification conversion programmes to its ports, installing mobile shore power and offering increasing rail solutions to further reduce its customers' footprints. With over 80% of its rolling stock already electric, as well as new innovations being developed in hydrogen and battery technologies to increase the potential for zero-emission trains, UK Rails is well-positioned to be a partner of choice on the journey to net-zero. 	 
Energy efficiency and smart city solutions	<ul style="list-style-type: none"> The Telecommunications division is increasingly offering digital solutions and 5G connected technologies to enable vast efficiencies and GHG emissions reductions for its customers. CKDelta, the Telecommunications division's data innovation business, has built expertise in understanding how all the elements of the electric vehicle ecosystem interact and is positioned to help other market participants in this complex rollout including power distributors, charge point operators, urban planners, and payment solutions providers. WINDTRE has a business goal to be the "smart partner of 100 smart cities" delivering Italy's cities with 5G-connected innovation to drive energy efficiency and smart mobility, among other areas. ista is one of the world's leading companies in providing products and services for greater energy efficiency, specialising in smart metering and billing solutions. Reliance Home Comfort offers a menu of Green Home Solutions including energy efficient heat pumps, smart thermostats, and tankless water heating systems that can create efficiencies of up to 96%. 	    

Solutions to drive a circular economy & sustainable sourcing

The Retail division has a responsibility to ensure its products are thoughtfully designed and sourced to reduce waste and material consumption while increasing durability, reusability, and recyclability. As already discussed, circular economy approaches are inherently intertwined with the net-zero transition, however given the importance of the opportunity it has been separately listed.

Design and procurement considerations to circularity also go hand-in-hand with considerations to where and how raw materials are being sourced. Questions such as “Does this packaging come from legally-logged forests?” and “Did this product unwittingly contribute to modern day slavery?” are among those that no retailer cannot ignore, no matter how far removed they are from the direct source of those impacts. Customers are demanding more from the brands that they chose to spend their money with and are becoming more conscious of the impacts of their purchasing decisions.

To make meaningful progress, the Retail division, as already discussed, has committed to packaging targets that relate to making packaging more reusable, recyclable, and/or compostable. It has also committed to:

- 100% of its Own Brand paper packaging being made exclusively from sustainable sources (i.e. recycled content or certified as being from responsibly-managed forests) by 2030. *Status: 46.6% achieved.*
- 100% of Own Brand purchase value from countries identified as high-risk being assessed for social and environmental compliance. *Status: 95% and 65% assessed, respectively.*

To communicate the sustainability benefits of the products it offers, be they clean beauty products or sustainably-certified seafood, the Retail division has developed a number of product lines and platforms that enable customers to shop according to their sustainability values and preferences. For example, Sustainable Choices, a filter and labelling mechanism, was launched by Watsons in 2020 to provide customers choice in four categories: Clean Beauty; Refill; Better Ingredients and Better Packaging. In 2021, it added a further 1,600 Sustainable Choices products both in-store and online in close collaboration with brand partners such as Johnson & Johnson, Procter & Gamble, Reckitt, Shiseido and Unilever.

In addition to take-back programmes across markets, the Telecommunications division is also developing more sustainable accessories and packaging. In 2021, **3** UK, **3** Ireland, **3** Denmark and **3** Sweden launched a range of sustainable mobile accessories with dbammante1928. **3** UK and **3** Denmark also launched 100% plant-based and compostable phone cases made by A Good Company.

Solutions to drive a more inclusive and diverse world

In 2015, Superdrug commissioned research focusing on the views of women of colour on high street beauty shopping. The research revealed that 70% of black and Asian women did not feel that the high street catered for their beauty needs, and over a third felt there wasn't enough guidance and advice available in high street beauty stores. To tackle this issue Superdrug launched the #ShadesofBeauty campaign in 2016 including a dedicated microsite with over 110 products and 55 new darker toned foundations. Superdrug also held meetings with the UK's largest makeup brands, resulting in Maybelline, L'Oréal and Revlon launching an additional 23 shades in response to this engagement.

In March 2021, Superdrug commissioned a further study surveying 1,000 individuals across the country from black and mixed-heritage backgrounds honing in on representation in publicity and marketing. Among many other important insights, the survey found that 35% do not currently feel represented when they shop for health and beauty products in high street beauty retailers and 86% reported that beauty retailers should make their advertising campaigns more inclusive. This research resulted in Superdrug committing to a range of actions including increasing black and mixed-heritage representation at all levels of the customer experience from the brand owners of the products sold, to representation at the store level, on to website and in social media imagery.



While today's digitally-connected way of life brings many benefits, it also results in forms of exclusion. Many services are now exclusively offered only through the internet and therefore not having the skills or access can become major life hurdles. Further, increased working and learning from home as a result of the COVID-19 pandemic has further widened the gap for those who lack the digital know-how or access to connectivity due to living in remote locations.

This issue can particularly affect rural populations where a major drawback may be a lack of coverage. Without it, running a business, staying connected, and getting around can be all the harder. **3** UK is working with the UK Government and several other mobile operators on a GBP1 billion project called the Shared Rural Network to bring guaranteed coverage to 280,000 premises and 16,000 kilometres of roads in rural areas across the UK. Once completed, 95% of the UK will have reliable 4G coverage.

3 Ireland has been working with the Arranmore Business Council on the island of Arranmore, five kilometres off the coast of Donegal, Ireland to create a more connected island and enable societal and economic development. Prior to this, the lack of connectivity had restricted the population's ability to establish and grow a business, as well as maintain the population to sustain their unique culture and way of life. Among many initiatives, **3** Ireland helped equip the island's Digital Hub with superfast connectivity and bandwidth to facilitate effective remote working and state-of-the-art conferencing facilities.

Priority goal 3: Create great places to work

The long-term success of the Group depends on the dedication and engagement of its teams as well as attracting the best talent in an increasingly competitive jobs market.

The Group aspires to be an employer of choice through competitive remuneration packages, continuous professional training, and rewarding and inclusive working environments.

Listening to employees is fundamental. Employee engagement is carried out in different ways depending on the business with engagement surveys conducted at least bi-annually, and supplemented with ad hoc surveys to address discrete events and trends, for example understanding employee health and wellbeing during the pandemic.

Targeted learning and development programmes address everyone from senior management to line level employees. Ensuring employees are prepared as the future of work changes, the Retail division launched the Digital Gym in 2021 with the aim of upskilling team members through learning modules that range from developing digital basics to more advanced digital skills to keep pace with the digital transformation. Employees in the Ports division also have the opportunity to retrain in the latest smart port technologies. For example, crane operators are being trained in autonomous crane operations; to date, 431 new operators have been trained across eight autonomous remote-controlled crane centres globally.

The Group also aims to create a pipeline of future talent by inspiring young people to consider careers within the diverse industry segments of the Group and it does this through internship programmes, career days and encouraging management to present at universities.

Starting from 2020, the Group dedicated particular focus to efforts in developing its approaches to inclusion and diversity and ensuring continued focus on employee engagement, particularly as employees return to workplaces following two years of social distancing and lockdowns.

The overall split of total employees is relatively balanced across the Group, 47% male/53% female. However, for the Ports, Telecommunications and Infrastructure divisions, these businesses continue to face structural barriers of these industries being traditionally male-dominated. They are therefore taking steps to change traditional models of working in an effort to make their industries more inclusive.



Diversity and inclusion at Hutchison Ports UK

Advancing technology in port automation and remote-controlled connectivity offers significant benefits in enabling more inclusive ports. For example, in a traditional crane operation, drivers may experience physical stress to their back, neck and shoulders. In a remote-controlled crane operation, drivers can have a better quality of workplace wellbeing from a remote-controlled crane centre. This less physically demanding work environment also opens up opportunity to a more diverse talent pool. Due to an increased focus on improving the diversity of its workforce, Hutchison Ports UK has begun to see the positive results of its inclusion and diversity strategy including a significant increase in the percentage of job applications from women. In 2021, 15.8% of applications received were from women, compared to 9.6% in 2020.

To do its part in encouraging more diversity in the technology sector, **3** Ireland launched a partnership with Trinity College Dublin in 2021 to fund 25 new **3** Ireland Scholarships for Women in STEM over five years and two **3** Ireland Trinity Access Teacher Fellowships for three years. To further embed a culture of inclusivity, WINDTRE linked gender diversity in hiring and pay practices to executive compensation (among other sustainability criteria) for the first time in 2021.

3 Denmark has set a gender diversity target of 40% female representation across its business, as well as individual gender diversity targets for retail stores, telesales and customer management teams. To support the achievement of these targets, specific initiatives have included a review of the recruitment process with job descriptions and postings amended to motivate a broader applicant pool, as well as changes to applicant screening and interviews.

While there is much work to do, that will take dedicated and sustained efforts, the Group is proud of several businesses that are being recognised for their leadership in inclusion and diversity. In 2021:

- WINDTRE and Superdrug were recognised in the 2021 Financial Times' Diversity Leaders index. This is the third year running that Superdrug has been recognised;
- WINDTRE was further awarded the 2021 Award for Best Employer for Women by Istituto Tedesco di Qualità e Finanza and La Repubblica;
- **3** Ireland was awarded the Gold accreditation by Investors in Diversity, with only five organisations to have achieved the Gold standard in Ireland;
- **3** Austria was awarded the equalitA seal of quality for its work to promote gender equality;
- UK Power Networks was ranked 10th in the Inclusive Top 50 UK Employers 2022 list;
- Northumbrian Water was awarded Inspiring Employer of the Year 2021 by the Inspiring Females Awards 2021; and
- AVR was recognised by the Social Entrepreneurship Performance Ladder in 2021 for its efforts to match disadvantaged candidates to job positions within its organisation, as well as encourage its suppliers and contractors to do the same.

Priority goal 4: Take all steps to protect employees and support communities and other stakeholders through the pandemic

The COVID-19 crisis has had devastating socio-economic consequences globally. While global recovery will be long, and will require every section of society to do its part, every core business is focused on taking all steps possible to protect employees and support communities, among which are the Group's customers, as well as other stakeholders.

2020 Group efforts to support employees focused on emergency response efforts such as distributing masks daily to its employees, ensuring workplace sanitising measures, and conducting temperature checks and onsite rapid COVID-19 testing. While these activities have become part of business as usual, Group focus in 2021 also centred on helping employees adapt to the "new normal" and transitioning back to workplaces as restrictions loosened. Due to the impacts of two years' of lockdowns, the Group has also focused on supporting health and wellbeing, particularly mental wellness.

To celebrate the 180th anniversary of A.S. Watson, teams globally celebrated this milestone by theming it as "The Year of Love". This year spotlighted the gratitude shared for all colleagues, customers, community members and business partners that have been part of the division's successes over the years, together with the hard work, dedication and resilience required throughout the pandemic. Through internal and external communications campaigns, the theme of gratitude was made the focal points of attraction and retention initiatives as well as customer and community engagement. The global ASW Heroes campaign also sought to further celebrate employees for their hard work and dedication through a global recognition programme.

The bi-annual ASW global employee engagement survey held in 2021 revealed notable increases in both score and response rate versus pre-pandemic levels indicating positive results as to how the Group has maintained high engagement levels during the pandemic.



At the beginning of 2021, ASW conducted a Mental Wellbeing Survey to understand what support its people needed as they transitioned back to the office. Following the results from the survey, A.S. Watson launched a pilot to train Mental Health First Aiders in Asia and Europe through a three-day accredited course provided through Mental Health First Aid England. These representatives from the People teams globally could then offer the appropriate and necessary support to colleagues in need.



Watsons Malaysia store

While many industries were able to transition their employees to working from home, many of the Group's employees remained at the frontline during the entire pandemic moving shipping containers, fixing power lines, maintaining network equipment, working in essential stores, and supporting their communities. The businesses therefore needed to find new ways of protecting the safety of employees, while ensuring millions of customers globally continued to receive critical and essential services. A key step taken by Northumbrian Water in protecting the safety of employees was the introduction of its in-house developed COVID-19 60 Second Check Tool for field teams to enhance safety before beginning jobs. The app follows a simple hierarchy of control that guides employees on what to do in their daily activities to keep them and their colleagues safe. After the initial launch, the tool was adopted enthusiastically by field teams with close to 66,000 checks carried out in only 10 months.

Recognising that many of the Group's customers were facing worrying and uncertain times due to the financial fallout from the pandemic, the Group's energy distribution network businesses sought to reorient their vulnerable customer programmes to address the impacts of the pandemic and introduce new forms of support. For example, Northern Gas Networks' Community Partnering Fund, which provides grants for grass roots projects, now has a "recovery from COVID-19" category, and has recently provided grants for schemes ranging from a community fridge project to funding a support centre that helps those in need

to purchase essential household items. Northumbrian Water is also working with independent debt charity StepChange, which provides free, expert debt advice and solutions for anyone looking to reduce arrears and re-schedule payments to ease debt problems.

The Telecommunications division continued to support its customers and communities with connectivity to enable remote working and study. **3** Ireland launched a Data for Schools programme, providing 15,000 free SIM cards with unlimited data to schools in Ireland for distribution to families and students to help with home-schooling and connectivity during lockdowns. WINDTRE extended its EduTime initiative, supporting under-25 customers to study remotely with 50GB of data at no cost. **3** UK worked with the UK Government's Oak National Academy to zero-rate access to its online classroom and resource hub and it also collaborated with the UK's Department for Education's Get Help with Technology programme to provide the most disadvantaged children across England with unlimited data allowing them to continue with their education online until the end of the school year. Recognising the difficulties faced by many small businesses as they worked to rapidly digitalise their business models and enable their employees to work from home, **3** Austria participated in the government initiative Digital Team Austria. Through this initiative, **3** Austria provided several thousand companies with high-performance, free Internet access during the pandemic.

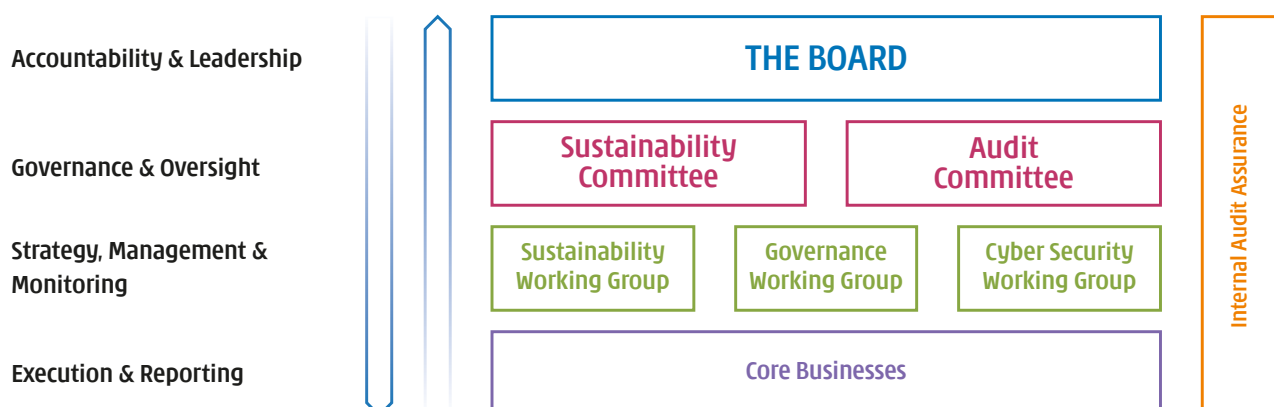
Governance

The ways in which the Group manages its sustainability impacts and acts on its governance-related goals – Embed rigorous and effective governance; and Operate responsibly and with integrity – are detailed in this section. This section should also be read in conjunction with the Corporate Governance Report included in the 2021 Annual Report for further detailed information regarding the corporate governance framework and practices.

The Group adopts a rigorous and effective sustainability governance structure, which integrates the governance of sustainability issues under its overall corporate governance structure and provides a solid foundation to ensure sustainability is embedded at all levels of the Group, with Board as well as management oversight.

Accelerating progress on its climate action strategy has been one of the Group's priorities during 2021. As part of the ongoing efforts to align the climate action strategy to leading practice frameworks, the Company has leveraged the TCFD recommendations to provide more detailed insight to the Group's climate-related governance structure, strategy, risk management, and metrics and targets which are disclosed in a separate standalone TCFD report accessible from the Group's corporate website.

Figure 13: Group sustainability governance structure



The Board

The Board has ultimate accountability for the sustainability strategy of the Group, as well as its management, performance and reporting with the support of the Sustainability Committee and the Audit Committee which play complementary roles in sustainability management. Directors are charged with the task of promoting the long term sustainable success of the Company and making decisions in the best interests of the Company with due regard to sustainability considerations.

The Board examines and approves the sustainability goals, objectives, policies and frameworks and reviews progress towards their implementation and achievement.

The Sustainability Committee and the Audit Committee report to the Board on sustainability risks and opportunities, which the Board examines and reviews with the committees periodically, as well as their impact on business strategy and new investments.

Board diversity

As at 31 December 2021, the Board comprised 18 directors, including seven Executive Directors, four Non-executive Directors and seven Independent Non-executive Directors. The Nomination Committee, chaired by Dr Rosanna Wong, an Independent Non-executive Director, with the Chairman Mr Victor T K Li and Independent Non-executive Director Mr Vincent Cheng as members, is responsible for reviewing the structure, size, diversity profile and skills matrix of the Board. The Group values the benefits of a diverse Board that possesses a balance of skill set, expertise, experience and perspective. Appointment of Directors is based on attributes that the selected Director will bring to the Board. Gender diversity of the Board stands at a 28%, including five females out of 18 Directors, a relatively high level amongst companies listed on The Stock Exchange of Hong Kong Limited.

Sustainability Committee


The Sustainability Committee, elevated as a Board-level committee in 2020, is chaired by Mr Frank Sixt (Group Finance Director and Deputy Managing Director), with Ms Edith Shih (Executive Director and Company Secretary) and Dr Rosanna Wong (Independent Non-executive Director) as members.

The key responsibilities of the Sustainability Committee are to make recommendations to the Board on the Group's sustainability goals, objectives and strategies. It oversees, reviews and evaluates actions taken by the Group to progress its sustainability priorities and goals. The Sustainability Committee also reviews and reports to the Board on sustainability risks and opportunities, and assesses emerging sustainability issues and trends that could impact the business operations and performance of the Group. Moreover, it considers the impact of the Group's sustainability initiatives on its stakeholders and advises the Board on external communication, disclosure and publications as regards to its sustainability performance.

The Sustainability Committee met two times in 2021. During these meetings, the Sustainability Committee focused on reviewing progress against the actions the Group committed to in the 2020 Sustainability Report. Given the heightened attention of the Group to accelerating progress on its climate strategy, particular focus was paid to assessing the progress of GHG emissions reductions target setting and alignment to science-based methodologies. The Sustainability Committee also reviewed and approved the 2020 Sustainability Report which was published in June 2021.

Foundational policies, including the Group-wide Sustainability Policy, serve as the ultimate guiding principles for the Group and detail the commitments of the Group to its stakeholders and the environment.

Table 14: Links to Group sustainability and governance policies

Sustainability policies	Governance policies
<ul style="list-style-type: none"> • Sustainability Policy  • Environmental Policy  • Health and Safety Policy  • Human Rights Policy  • Modern Slavery and Human Trafficking Statement  • Supplier Code of Conduct  	<ul style="list-style-type: none"> • Anti-Fraud and Anti-Bribery Policy  • Board Diversity Policy  • Code of Conduct  • Director Nomination Policy  • Information Security Policy  • Media, Public Engagement and Donation Policy  • Policy on Appointment of Third Party Representatives  • Policy on Personal Data Governance  • Policy on Securities Dealings and Handling of Confidential and Price-sensitive Inside Information  • Whistleblowing Policy  • Shareholder Communication Policy 

Audit Committee

The Audit Committee maintains oversight of the effectiveness of the financial reporting, risk management and internal control systems of the Group, and is responsible for reviewing the policies and practices of the Group on corporate governance including compliance with legal and regulatory requirements per the Audit Committee Terms of Reference.

Sustainability Working Group

Supporting the Sustainability Committee is the Sustainability Working Group, comprising two Executive Directors as Co-Chairs, as well as other senior executives from key departments that influence the material sustainability impacts of the Group.

Governance Working Group

To assist the Audit Committee and the Sustainability Committee in discharging its responsibilities, a Governance Working Group chaired by the Executive Director and Company Secretary, and comprising representatives from key departments of the Company, provides timely updates, identifies emerging matters of compliance, and establishes appropriate compliance policies and procedures for Group-wide adoption.

Cyber Security Working Group

The Cyber Security Working Group is chaired by the Group Finance Director and Deputy Managing Director and comprises technical specialists from the core businesses, as well as representatives from Internal Audit and Group Information Services Department. It oversees the cyber security risks and defences of the Group to ensure that its efforts in this area are effective, coherent, and well-coordinated. To supplement this, a sub-Working Group focused on

Operational Technology ("OT") has also been established to further build common approaches to cyber security within OT networks, while leveraging the deep knowledge and opportunities for collaboration across the Group's businesses.

Sustainability at the core businesses

Each of the core businesses operates in unique sectors and geographies and are therefore supported by their own sustainability leads, governance structures and programmes. Where necessary to their industry and geography, additional policies are adopted to support approaches in addition to the policies of the Group. As a common standard, each core business has set up its own cross-departmental Sustainability Working Group which is chaired by senior management.

Enhancing sustainability data and communications

Having the best quality data is fundamental to setting targets, achieving meaningful progress and giving stakeholders a true reflection of impacts and performance. In 2021, the Group partnered with FigBytes, a sustainability insights platform provider, to use a single, scalable, SaaS platform to manage, track and enable all core businesses globally to report their sustainability data. The platform will further enable the Group to set goals in the system and use data analytics to turn complex data into actionable insights through a dynamic tracking and communications tool. The Group will be launching the platform globally during 2022 with expected launch in Q3 2022.

Internal audit

Internal Audit, reporting directly to the Audit Committee and administratively to the Group Finance Director and Deputy Managing Director, provides independent assurance as to the effectiveness of the risk management activities and controls of the Group, including those related to sustainability. Internal Audit also has an important role throughout the year in sustainability data quality oversight as well as performing ongoing audits of operations to ensure the effectiveness of sustainability-related controls.

Risk management

As part of its enterprise risk management, the Group adopts a top-down and bottom-up approach to managing sustainability risks. Bi-annually, each core business is required to formally identify and assess its risks and as well as the control procedures that are in place in managing the risks identified.

Subject to independent audit assurance by Internal Audit, these self-assessment results are submitted to the Executive Directors and the Audit Committee for review and approval. Relevant assessment results are also shared with external auditors.

During the year, the Group continued to place more focus on climate change to ensure that the associated risks have been addressed or are being mitigated.

Business ethics and integrity

The Group is committed to ensuring that its business activities are carried out with the highest standards of integrity, honesty and transparency. The Board sets a tone of zero tolerance towards fraud and corruption. Through the Audit Committee, the Board has ultimate oversight of business ethics and compliance efforts and also regularly reviews the effectiveness of the risk management and internal control systems of the Group on an ongoing basis.

Further, as a signatory of the United Nations Global Compact, the Group is committed to working against corruption in all its forms.

The Group has a strong internal control framework to guide its businesses in maintaining the highest standards of ethics and business conducts. The framework has five core elements:

Figure 15: Elements of the Group's internal control framework



Governance policies

The Code of Conduct (the "Code") sets out the professional and ethical standards for the Group to observe in all business dealings, including provisions dealing with conflict of interest, fair dealings and integrity, bribery, equal opportunities, diversity and respectful workplace, safe and healthy workplace, confidentiality, personal data protection and privacy, protection of the environment as well as whistleblowing procedures.

The Code applies to all subsidiaries and controlled affiliates of the Group, where every director and employee requires strict adherence to the Code as well as all applicable laws, rules and regulations within the jurisdictions in which the Group operates. For those non-controlled affiliates, employees serving as directors should, to the extent possible, encourage such affiliates to adopt and follow the Code.

The Anti-Fraud and Anti-Bribery ("AFAB") Policy outlines the Group's zero tolerance approach to bribery and corruption and guides employees in recognising the circumstances which may lead to, or give the appearance of, being involved in corruption or unethical business conduct. It includes provisions relating to kickbacks, political and charitable contributions, gifts and hospitality, and procurement of goods and services. For political donations, in accordance with the AFAB Policy as well as the Media, Public Engagement and Donation Policy, it is the general policy of the Group not to make any form of donation to political associations or individual politicians.

Further, business partners and suppliers working with the Group are encouraged to maintain the highest standards of ethical conduct and professionalism in accordance with the Supplier Code of Conduct. They are required to implement appropriate anti-corruption policies and compliance programmes as well as verify if the policies are being complied with. Suitable anti-corruption clauses are incorporated in the contracts with business partners and suppliers to ensure that they are fully aware of the requirements of the Group.

The Group is committed to fully complying with its statutory tax obligations in all the jurisdictions in which it operates, including the payment, reporting and recovery of taxes. To ensure that these obligations are fulfilled, the Group has developed a Tax Governance Framework to provide guidance on how its tax affairs should be managed, including regular assessment of the tax compliance process through periodic questionnaires and reviews. For more information, please see the Group Tax Strategy.

Communication and training

All employees are well informed of the Code as well as the aforementioned governance policies. Employees are also required to self-declare their compliance with the Code and related policies on an annual basis.

Training on business ethics and the ethics policies of the Group is provided to all new joiners as part of their induction programmes. For specific topics such as anti-fraud and anti-corruption, tailor-made training is provided to employees based on their role and area of responsibility at least once every two years. In 2021, a business ethics e-training package was provided to Directors, which featured ethical challenges faced by company directors.

Due diligence

The Group's commitment to anti-fraud and anti-corruption is also reflected in its management of business partners, suppliers, and third party representatives such as advisers, agents, and consultants. The Group conducts due diligence on the selection and renewal of new and existing business partners or suppliers based on an assessment of risk factors including transaction size, product or service nature, financial and compliance status, qualification, potential conflict of interest, and country risk.

Further, the Group adopts a comprehensive set of procurement and tendering procedures to ensure that related activities are carried out in a fair and transparent manner. Approval from the Head Office is required before engagement of third party representatives, and material capital expenditure projects (in excess of predefined thresholds) also requires Head Office review and approval prior to any binding commitment.

Ongoing assessment

Core businesses are also required to self-assess their control measures at least bi-annually to further drive improvement. In particular, for any material control deficiencies identified, they would formulate an action plan and monitor the progress closely. The results of this self-assessment are reviewed by Internal Audit and reported to the Executive Directors and the Audit Committee.

Monitoring and review

The Group has implemented sound financial controls (including adequate segregation of duties, authorisation controls, records logging, supporting documentation, and audit trail) to prevent and detect irregularities or misconducts. This control system is subject to regular review and audit. In particular, Internal Audit, which is responsible for assessing the effectiveness of the internal control system of the Group, conducts independent audits of the Group's ethical standards and policies in the areas of anti-corruption, fraud incident management, supplier code of conduct, fair dealing with suppliers, donations/sponsorships, handling of confidential/inside information, personal data governance, anti-trust, workplace safety, and accuracy of books and records. The audits run in a typical three-year cycle and are Group-wide. Business units exposing to higher fraud and corruption risks are subject to more frequent and intensive audits (generally once per year). All audit findings are reported to the Audit Committee and the Executive Directors and are also shared with external auditors.

The Group encourages employees and others who deal with the Group (such as customers, suppliers, creditors and debtors) to raise concerns about any suspected impropriety, misconduct or malpractice through confidential reporting channels. This is supported by the Whistleblowing Policy. All reported incidents are treated confidentially, and the individuals raising concerns are protected against unfair dismissal, victimisation or unwarranted disciplinary action for genuine reports made.

The whistleblowing channels that the Group has established are proactively communicated to employees in local languages, available on corporate websites, and also allow for anonymous reporting of improprieties. Each core business further derives its own set of internal escalation procedures to cater for its operational needs, and is required to report the incident to the Group Finance Director and Deputy Managing Director and the Head of Internal Audit function within one working day should the amount involved exceed the de minimis threshold.

Incidents or suspected incidents of fraud and corruption are immediately investigated. Internal Audit is responsible for reviewing every reported incident, seeking relevant stakeholders for direction or comment, determining which incident requires a more in-depth investigation, and escalating promptly to the Executive Directors and the Audit Committee if the incident is of a significant nature. A summary of the reported incidents and relevant statistics (including results of independent investigations and actions taken) is presented to the Executive Directors quarterly and at Audit Committee meetings. For concerns that are substantiated, disciplinary actions including verbal or written warning and termination of employment are taken after due management consideration. Violation of the laws and regulations are reported to the police or other law enforcement organisations.

Privacy and security

Customer data privacy and the management of cyber security risks are at the top of the agenda of the Group, and rigorous policies and governance mechanisms are in place to maintain consistency and oversight across operations.

In terms of privacy, the Group Policy on Personal Data Governance, which embraces the principles of respecting the rights of the individual, of procedural transparency, and of lawful processing, underscores the commitment of the Group to the protection of personal data of customers and employees. The Policy governs fundamental privacy aspects such as the purpose of collection, usage, retention and sharing/transfer of personal data, and safeguards if the data are to be processed by third parties.

The CK Hutchison Cyber Security Working Group, supported by technical experts from across the entire Group, oversees the Group's cyber security defences, monitors the threat landscape facing all of the Group's operations, provides guidance to business units, and ensures coordinated and effective efforts in managing cyber security risks across the Group.

To this end, the Information Security Policy instructs the approach of the Group in protecting the confidentiality, integrity and availability of data, including personal data, as well as in managing and escalating security incidents. The Policy also forms the basis on which the businesses formulate their local policies and procedures.

In addition, through the CK Hutchison Global Cyber Security Collaboration Platform, colleagues within the Group share knowledge, exchange ideas, and collaborate to find the right security solution and the right vendor in a fast-evolving threat environment where organisations are often faced with a vast array of choices.

Internal Audit carries out independent cyber security audits across the Group, with assignments in recent times focusing on the awareness of COVID-19-themed phishing emails, and security considerations in relation to working from home and the use of collaboration tools for virtual team-work. Further, Internal Audit periodically engages external consultants to conduct ethical hacking to probe cyber security defences in real-life settings, and follows up to see that security loopholes uncovered in these exercises are promptly and properly closed.

Further discussion on management approaches to privacy and cyber security are provided within the core business sections next.





Hutchison Ports ETC Rotterdam

PORTS AND RELATED SERVICES

SERVING SOCIETY

The global ports network is well recognised as the backbone of international trade and globalisation. Ports act as catalysts for economic development as they facilitate trade, support supply chains and serve as important sources of employment. Operating 10% of containerised marine cargo globally, the Ports division ("Hutchison Ports"), has a network of ports strategically located along the most important trade lanes in the world today.

During the COVID-19 crisis, it has been more important than ever to keep supply chains open and to allow trade and cross-border transport to continue. Together with the global maritime transport industry, Hutchison Ports has been playing a critical role in the response in maintaining the vital movement of food, medical supplies and energy around the world.

The pandemic has spotlighted how important a role the division plays in ensuring the healthy functioning of society as well as the significance of its aim to be –

The preferred partner for a sustainable supply chain.

Hutchison Ports Thailand



Material topics, goals and progress

The following table highlights the material topics identified for Hutchison Ports, as well as the relevant UN Sustainable Development Goals ("SDG"), division goals and progress made.

Material topics & SDGs	Goals	Highlights
Pioneering in smart port technology  	<ul style="list-style-type: none"> Promote a culture of technological innovation. Invest in digitalisation and automation across the network in building the smart port network of the future. Embed sustainability considerations in new ventures, projects and developments. 	<ul style="list-style-type: none"> Developed the Smart Network Strategy including proprietary systems and tools to enable port transformation, e.g. the Next Generation Terminal Management System and ubi, the customer-facing app developed to drive maximum efficiencies. Over US\$210 million committed and planned CAPEX investment in electric and hybrid-electric port infrastructure for 2021 and 2022. Innovating in remote-control connectivity and electric autonomous truck integration. Bringing 5G to Hutchison Ports Port of Felixstowe in collaboration with the Telecommunications division. Re-tooling and training employees in latest technologies.
Taking action on climate change  	<ul style="list-style-type: none"> Set global reduction targets in greenhouse gas ("GHG") emissions from port related activities. Develop a net-zero transition plan. Convert equipment and infrastructure to electric alternatives, with a priority to reduce diesel consumption. From 2024, all internal tractors purchased must be zero-emission vehicles and all diesel-powered yard cranes must be phased out. Increase renewable energy production and green electricity uptake. Be at the forefront of hydrogen-fuelled technology in port operations. Build climate resiliency into terminal developments and redesign. 	<ul style="list-style-type: none"> New 2021 GHG emissions reduction targets set: <ul style="list-style-type: none"> Reduce diesel consumption per Twenty-foot Equivalent Unit ("TEU") by 30% by 2030 versus a 2020 baseline; and Reduce GHG emissions intensity (kgCO₂e per TEU) by 20% by 2030, versus a 2020 baseline. Hutchison Ports ECT commits to be a net-zero port operator by 2035. Working with third party to develop a net-zero transition plan. Reduced scope 1 and 2 emissions by 11% in 2021 versus 2018. Continued large-scale replacement of low-carbon equipment and infrastructure. 696.35 MWh of renewable energy generated onsite. To be increased to 124.43 MWh in 2022. Hutchison Ports BEST commits to sourcing 100% renewable electricity from 2022. Collaborating to make Freeport East a green hydrogen hub and centre for excellence in sustainability in the UK. Conducted a global climate risk assessment of all ports in 2021 highlighting a short list of ports for further examination of exposure to long-term physical climate risks.

Material topics & SDGs	Goals	Highlights
Creating a great place to work     	<ul style="list-style-type: none"> Attract, develop and retain high-performing talent. Create an inclusive and diverse culture. Work to level the ratio of male/female port personnel. Develop gender-neutral hiring practices. Improve health and safety awareness of employees through training and communication. Promote healthcare and wellbeing initiatives in the workplace. 	<ul style="list-style-type: none"> Employee engagement surveys in place to encourage two-way feedback. Supports leadership development at all levels through the Regional Development Programme and the MYPORT Programme. Formalised inclusion and diversity as a global focus area in 2020 and collecting a new set of KPIs to track and monitor progress. Rolled out a three-year safety training programme focusing on high impact safety areas. New global wellness programme, BEWELL, rolled out in 2021. Employee safety measures in light of the pandemic implemented as the highest priority.
Investing in local community development and environmental protection   	<ul style="list-style-type: none"> Be active members of the community. Work with local schools and universities, to promote sponsorships and port visits. 	<ul style="list-style-type: none"> Ongoing Hutchison Ports' Dock School Programme since the 1990s sponsoring scholarships, school materials and equipment and other educational initiatives. Established "Start Your Journey @ Port Programme" at Hutchison Ports HIT to encourage the younger generation to pursue opportunities in the ports industry. Supported local community hospitals with PPE and hospital equipment during the pandemic. Environmental protection initiatives (such as the "GO GREEN" campaign) underway through volunteer programmes and biodiversity conservation initiatives.
Ensuring responsible business practices  	<ul style="list-style-type: none"> Grow responsibly through ethical and sustainable business practices. Implement sustainable procurement standards. 	<ul style="list-style-type: none"> All employees receive training on anti-corruption on new-joiner orientation, with refresher training provided annually. All employees must declare compliance with the Code of Conduct. Whistleblowing mechanisms and hotlines in place. Cyber-attack security plans, programmes and drills carried out. Contractor evaluations underway at Hutchison Ports UK.
	SDG 17, "Partnerships for the goals", underpins action on all material topics and enables the best possible impacts through collaboration and working with relevant partners.	

Pioneering in smart port technology

Hutchison Ports stands at the forefront of technological advancement in the ports industry. Through its Smart Port Strategy, continuous investment and exploration, and promoting a culture of innovation, the division has developed cutting-edge solutions that contribute to greater efficiency across every aspect of port operations.

Digitalisation

Digitalisation brings many benefits environmentally, socially and economically. Advances in automation and new innovative technologies, such as big data and artificial intelligence, enable a new smart port era, offering significant opportunities to Hutchison Ports. Further, the COVID-19 pandemic has highlighted just how critical digitalisation is to keeping supply chains moving, enabling the continued smooth operations of transportation networks, shipping and ports, and reducing human-to-human contact to lower the risk of virus transmission. With disrupted sailing schedules and port congestion likely to continue in the medium term, technology-enabled flexibility and adaptability in a post-COVID world is essential.

Being in the volume business, Hutchison Ports looks to big data for a wide spectrum of its business decisions including investments and operations. Hutchison Ports is also increasingly using artificial intelligence and big data to analyse terminal traffic to optimise and maximise terminal productivity.

Hutchison Ports' proprietary operating system, Next Generation Terminal Management System ("nGen"), collects container and ship data and puts together plans using algorithms and artificial intelligence for the most optimal and efficient use of terminals. These plans will then be used in the execution of shipside and landside operations.

"ubi" is another crucial proprietary operating system developed by the division to enhance the customer experience and enable maximum efficiency. It is powered by nGen and integrates waterside, yard and landside operations, allowing customers to receive the latest updates and information on their smart phones and devices at any time enhancing port-level productivity, efficiency and safety. For example, the Truck Appointment function allows for streamlined collaboration between the terminal and the customer leading to reduced terminal traffic congestion and idling time, and the Safety Alert for remote-controlled rubber-tired gantry cranes ("RTGC") function alerts drivers from gate-in to gate-out by detecting the truck's location and provide warning notifications.

Paperless port operations are also now becoming the norm through migration to digital cloud platforms to enable processes such as online goods registration, invoicing, payment, and assigning pickup points through QR code notification.



Remote-controlled centre at Hutchison Ports Thailand

SETTING THE BENCHMARK IN PORT AUTOMATION, EFFICIENCY, AND SUSTAINABILITY

When Hutchison Ports took over the Barcelona container terminal in 2006, it was a manual operation with little electrification.

Now spanning 80 hectares, including 1,500 metres of berth, Hutchison Ports BEST ("BEST") is the first semi-automated terminal in the Group and the most technologically advanced port development project in Spain.

BEST's productivity and carbon footprint have improved the original terminal metrics by over 50% thanks to its automated technology and mostly electrified equipment. For example, the digitalisation of a large part of BEST's processes through a 100% digital, automatic gate system reduces waiting times, vehicle idling and consequently, fuel consumption and GHG emissions.

Electrification has become the procurement standard for berth, yard and rail equipment, with only fossil-fuel based equipment needed for discrete equipment without viable electric alternatives. However, a 100% electrified port is the aim and the terminal will keep abreast of all feasible options.

Another essential element in the reduction of GHG emissions is the installation of the largest network of electrical connection points for refrigerated containers with more than 2,500 points. BEST is also working with the Barcelona Port Authority to have the first electrified quay in southern Europe for connecting container vessels in the terminal by 2023. This means that rather than

burning fossil fuels during unloading, port vessel calls can connect to shoreside electricity powered by renewable energy.

BEST is also installing more rooftop solar panels on its buildings, charging points for electrical cars in the car park and it will begin utilising 100% renewable electricity in 2022.

In 2021, in recognition of this dedication and excellence in terminal efficiency and sustainability, BEST was awarded the "Best Container Terminal in Europe" by Asia Cargo News. BEST was recognised for maintaining high standards in reliability and quality of service during the complex times of the pandemic through which its productivity was unaffected and maintained as one of the highest in the world.

BEST is the first semi-automated terminal in the Group and the most technologically advanced port development project in Spain



Hutchison Ports BEST

Remote-controlled connectivity

Advancing technology in equipment electrification, automation and remote-controlled connectivity offers significant benefits in port efficiency. In a remote-controlled environment, equipment can be deployed dynamically to meet peaks in demand while locating operators, vessel controllers and supervisors in close proximity contributes to operational and fuel efficiencies.

To date, Hutchison Ports has deployed 42 remote-control quay crane units worldwide, with an additional seven units in progress. 68 remote-controlled RTGCs have also been deployed globally and an additional 55 units will be commissioned in 2022-2023.

While digitalisation and automation may change the nature of some jobs, they also create new job opportunities for equipment operators to be trained on the latest technologies as well as offering better workplace safety and wellbeing. To date, 431 new drivers have been trained across eight autonomous remote-controlled crane centres globally. Further, in a traditional crane operation, operators may experience physical stress to their back, neck and shoulders. From the comfort of the remote-controlled crane centres, drivers can have a better quality of workplace wellbeing. This less physically demanding work environment also opens up opportunity to a more diverse talent pool.

AUTONOMOUS TRUCK TECHNOLOGY AT HUTCHISON PORTS THAILAND

In 2021, Hutchison Ports Thailand transitioned from pilot to successful integration of six autonomous trucks into its normal operations making it the first port operator globally to achieve true mixed-traffic-mode terminal operations. With numerous trial runs and safety test results verified by risk assessment experts during 2020 and 2021, Hutchison Ports has successfully adapted the autonomous truck from a concept vehicle to a pragmatic workhorse that has enhanced and improved productivity and safety levels at Terminal D.

Equipped with advanced artificial intelligence machine learning technology, the autonomous trucks have learned the necessary driving skills such as self-organising intelligence, lane-keeping, overtaking, obstacle avoidance and intersection turning in structured and unstructured roads. GPS further enables the trucks to navigate around the terminal and perform specific tasks assigned by the Fleet Management System, which coordinates and plans the routing for each autonomous truck. The system receives job order messages from the terminal management system and then disseminates path planning from the autonomous truck's current location to the destination. Both manned and unmanned trucks follow the same traffic rules to create a dynamic operating environment to achieve maximum efficiency, flexibility and safety.

The new terminal operating ecosystem is resulting in an optimised workflow, which results in a higher level of efficiency to shipping lines and port users.



Electric autonomous truck at Hutchison Ports Thailand



The autonomous trucks use the latest technology and innovation and is part of our ongoing plan to transform Terminal D into the most technologically advanced and efficient container terminal in the region.

- Stephen Ashworth, Managing Director, South East Asia, Hutchison Ports



5G

The advent of 5G and Internet of Things (“IoT”) technology will bring the technological and smart capabilities of a port to a new level. In 2021, as part of the UK Government’s 5G Testbeds and Trials Programme Hutchison Ports Port of Felixstowe was granted funding to test two use cases, which are being rolled out in partnership with the Telecommunications division.

The first is enabling remote-controlled RTGCs via the transmission of CCTV images over 5G technology enabling operators to work from remote-control centres. The second use case is the deployment of IoT sensors and machine learning to better predict maintenance requirements of the Port’s quayside cranes. Limiting unplanned downtime on this critical port infrastructure saves the ports significant cost and helps improve customer satisfaction.

The 5G equipment that is needed to test both of these use cases has recently moved from the lab environment and is now live at the Port of Felixstowe with successful transitioning and no impact to operations. These trials will be completed in 2022 and positive results suggest that these test cases will be fully transitioned to live services in 2023.

Collaboration to accelerate the digital transformation

In 2020, Hutchison Ports joined eight leading ocean carriers and terminal operators to form a consortium to develop the Global Shipping Business Network, an industry body seeking to drive and accelerate the adoption of digital operations within the shipping industry. The Group also seconded one of its leading data scientists to lead the Network. Its unique combination of carriers and terminal operators provides a balanced perspective, generating new ideas to transform the industry by going beyond the conventional carrier-centric business model to create value for all stakeholders in the supply chain.



During 2021, the consortium rolled out its first blockchain-enabled application, Cargo Release. Leveraging blockchain, Cargo Release offers a paperless, transparent solution connecting port import actors, including shipping lines, consignees, their agents, and terminals. By eliminating the need for paper, it simplifies data exchange and shortens operation time among parties with real-time updates, cutting the time for cargo to be ready for release from days to a matter of hours. The rollout was particularly timely given the intense demand and pressure on supply chains throughout 2021.

Taking action on climate change

The shipping industry accounts for roughly 3% of global GHG emissions, a figure expected to triple by 2050 without significant reduction measures. The majority of this however relates to shipping liners and the fuel used to transport marine trade across vast distances. While accounting for a small fraction of the total, port terminals can however play an important role in mitigating ship GHG emissions while shipping liners are docked at port and to ensuring the cargo is transited with the lowest impact.

GHG emissions reduction targets

In 2021, the Ports division updated its GHG emissions reductions targets to:

- Reduce diesel consumption per Twenty-foot Equivalent Unit (“TEU”) by 30% by 2030, versus a 2020 baseline.
- Reduce GHG emissions intensity (kgCO₂e per TEU) by 20% by 2030, versus a 2020 baseline.

While the nearer term target falls short of the guidance by the IPCC of needing to halve GHG emissions by 2030, the Ports division is confident of a net-zero future. In the short-term, a relatively immature renewable energy supply chain and green equipment availability in various geographic locations to enable full-scale conversion does remain a barrier to large scale decarbonisation. While significant progress has still been made, further leaps in technology are required, as well as a consideration to lead-times and depreciation cycles. Additionally, there is further work to do to review scope 2 opportunities, particularly in the sourcing of renewable electricity, which may enable further acceleration of decarbonisation. The Ports division is currently working with a third party sustainability expert to review its GHG emissions reductions opportunities in the short and medium-term as well as further develop its long-term net-zero transition strategy.

Several ports have however been identified as leaders in sustainability within the Hutchison Ports network, acting as those that can forge the path for others to follow. Hutchison Ports ECT (“ECT”), responsible for 19% of Hutchison Ports’ scope 1 and 2 emissions, has committed to net-zero in its own operations by 2035.

With the state-of-the-art quay cranes and straddle carriers, loading, discharging and restowing of containers are handled efficiently and expediently through the utilisation of the Terminal Operating System (TOS)



ZERO-EMISSION TERMINALS BY 2035

Hutchison Ports ECT Rotterdam took the step in 2021 to commit to having zero-emission terminals by 2035. Crucial to this ambition is the achievement of converting 100% of its fossil-fuel based equipment from diesel to electric as well as leveraging digital and automated technologies. This transformation does not happen overnight; indeed ECT developed the world's first automated terminal using Automated Guided Vehicles in the 1990s. Through continuous investment, and a wealth of advanced expertise and technology built over time, ECT Delta is still leading the way today in Europe. Other meaningful initiatives to help ECT achieve net-zero will include refurbishing terminal buildings to be more energy efficient, facilitating onshore power and investigating the potential for hydrogen.

GHG emissions performance

Hutchison Ports' scope 1 and 2 emissions relate to:

- Scope 1: on-site fossil fuel combustion from equipment operation and in-house power generation in the terminals; and
- Scope 2: GHG emissions associated with the purchase of electricity, steam, heat, or cooling.

Scope 1 and 2 GHG emissions increased by 23,724 tonnes CO₂e in 2021 versus 2020, representing a 5.4% increase in GHG emissions which is due to a sharp increase in business traffic as a result of supply chain pressures during 2021 as the business units recover from the pandemic disruption. Comparing to 2018 data, GHG emissions have decreased by 11%.

While the supply chain pressures are expected to stabilise in 2022, the issue still remains in needing to reduce absolute GHG emissions and decoupling business growth from GHG emissions. Ultimately, for scope 1 and 2 emissions, this will require a combination of electrification as well as ensuring the electricity that powers this equipment is also from renewable sources.

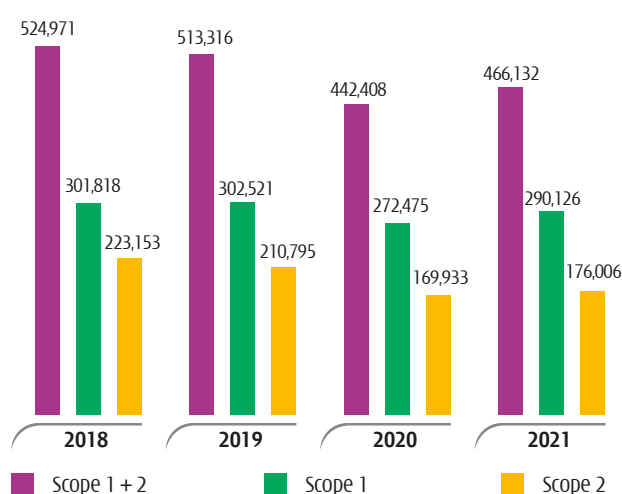
Scope 3 GHG emissions

The Ports division has yet to calculate its scope 3 emissions but commits to beginning reporting from 2023. Developing a scope 3 footprint is currently part of its wider piece of work to study its GHG emissions profile with the help of third party expert assistance.

Net-zero transition opportunities

Hutchison Ports has already positively assessed the opportunities to transition to a zero-emissions port network by 2050. The work being undertaken during 2021 and 2022 with the help of a third party expert will further flesh out the short, medium and long-term pathways for achieving this ambition.

Figure 16: Scope 1 and 2 GHG emissions performance (tonne CO₂e)



1. Zero and low-emission infrastructure

Over 80% of a ports' energy consumption relates to the fuel and electricity consumed by container handling equipment (forklifts, rubber-tired gantry cranes, quayside container cranes, and internal tractors, for example) and terminal vehicles (shuttle buses and passenger vehicles, for example).

Advancements in the electrification and adoption of hybrid alternatives of existing equipment have allowed Hutchison Ports to transition away from traditional diesel combustion. While there has been significant conversion in equipment types where viable alternatives already exist, there are still gaps for particularly electric alternatives in the market for certain port equipment where they have yet to be developed or even tested. However, the Group's

technology teams remain positive that new developments are underway, and are actively keeping connected with suppliers to encourage supply of these models.

While electric vehicles are the Group's preference, and certainly will be the general standard for any new terminals, hybrid vehicles often remain the interim option. On average, a hybrid RTGC can reduce GHG emissions by 35-45% versus a pure diesel alternative. Table 17 illustrates the progress in converting the Group's main port equipment globally from diesel to electric and hybrid. It also outlines the CAPEX investments planned for 2021 and 2022 highlighting the significant investments required to transition this equipment.



RTGCs are the primary method for moving containers in terminal yards. As large, energy-intensive structures, RTGCs represent more than 40% of the total fuel consumption at a typical port. The conversion from diesel to electric delivers energy savings of nearly 50%.

Table 17: Hutchison Port's short-term sustainable transportation rollout

Equipment	Total units	Total electric	Total hybrid units	Capital expenditure ("CAPEX") committed and planned for 2021 & 2022
Rubber-tyred gantry cranes (RTGC)	1,083	382	178	Thailand: 8 electric RTGCs Pakistan: 11 electric RTGCs UK: 17 electric RTGCs Egypt: 12 hybrid RTGCs Mexico: conversion of 20 diesel to electric RTGCs; 3 new electric RTGCs; 3 hybrid RTGCs Poland: conversion of 4 diesel to electric RTGCs Panama: conversion of 15 diesel to electric RTGCs = US\$110 million of CAPEX investment
Straddle Carriers (SC)	226	0	8	Netherlands: 20 hybrid SCs Bahamas: 10 hybrid SCs Spain: 6 hybrid SCs = US\$37 million of CAPEX investment
Automated Guided Vehicles (AGV)	362	0	85	Netherlands: 77 hybrid AGV = US\$49 million of CAPEX investment
Reach-stackers (RS) and Empty Container Handlers (ECH)	418	0	0	Hutchison Ports is scanning the market for options. More recently some electric and hybrid versions have been launched and the Group is evaluating these products.
Internal tractors	1,639	6	0	Until recently there were no viable alternative options other than diesel for port-appropriate tractors. However, with recent market launches, a large-scale global rollout of electric tractors is underway, including the following short-term plans: UK: 48 electric trucks. Thailand: 9 manual electric trucks & 9 autonomous electric trucks. Oman: 14 electric autonomous trucks. Mexico: 18 electric trucks. = US\$14 million of CAPEX investment

Climate change is one of the greatest challenges of our time and Hutchison Ports is committed to playing its part by minimising the impact of port operations on the environment. Promoting a culture of technological innovation and adoption of alternative fuels is a key strand of our strategy. To move forward in our aim to decarbonise our operations, we are investing in new equipment and have now placed an order for 48 battery-powered terminal tractors and 17 zero-emission remote controlled electric automated rubber-tyred gantry cranes. This investment takes us another step nearer to our goal.

- Clemence Cheng, Executive Director, Hutchison Ports, Managing Director, Europe and co-chair of the Hutchison Ports Group Sustainability Committee

2. Renewable electricity

Another area of opportunity is in renewable electricity where only 8% of total electricity is sourced through long-term power purchase agreements and energy attribute certificates. BEST has committed to a new agreement to source 100% renewable electricity in 2022, which will increase the division's overall procurement of renewable electricity by another 10%, as the 4th largest consumer of electricity in the Hutchison Ports portfolio. The Group will continue to seek further opportunities in this area.

Aside from renewable electricity, since 2012, Hutchison Ports has progressively been installing solar infrastructure. In 2021, 696MWh of renewable energy was generated onsite with expansion plans in place to generate an additional 124MWh in 2022. For example, BEST is also expanding the number of solar panels for self-consumption with a total surface area of 4,763 m², which will help to reduce CO₂ emissions by 250 tonnes.

3. Energy efficiencies

Scope 2 GHG emissions account for 38% of operational GHG emissions, a figure that is set to grow in proportion as port infrastructure transitions from consuming petrol and diesel (scope 1) to electricity (scope 2). Electricity is also consumed onsite to power port facilities and offices through which efficiencies are being created through behaviour changes, the procurement of energy efficient HVAC and other energy-consuming systems, and the adoption of LED lighting.

4. Mobile shore power

Mobile shore power provides the opportunity for shipping lines to connect to landside electricity rather than burning fossil fuels in port, thereby reducing the direct carbon footprints of shippers and improving local air quality.

In 2020, the International Maritime Organization enforced a new limit on the sulphur content in fuel oil used on board ships. As a result, more vessels may look to switch to use shore electric power while at berth.

Current progress and future plans in mobile shore power include:

- Hutchison Ports in China including terminals in Shanghai, Ningbo and Xiamen, have shore power connectivity on their berths.
- ECT is collaborating with the Port of Rotterdam to achieve the Port Authority's ambition to supply 90% of the ships visiting public quays in the urban area with shore power by 2030.
- As part of the Port of Barcelona's aims to achieve 50% CO₂ emissions reduction by 2030, BEST is working with the Port Authority on the installation of six mobile shore connection points to begin construction in 2023.

5. Supporting the shift to rail and efficiency in outbound logistics

The European Commission's Sustainable and Smart Mobility Strategy, published in December 2020, calls for "decisive action to shift more activity towards more sustainable transport modes", aiming to increase rail freight transport by 50% by 2030, among other goals.

The favourable geographical location of the division's terminals means that Hutchison Ports is well placed to develop multi-modal feeder hubs and railway networks connecting containers to and from its seaports to more inland destinations.

A key part of Hutchison Port's strategy when taking over and transforming the BEST terminal in Barcelona, has been to make it one of the gateways to the European market by leveraging train lines and building its surrounding hinterland. It has an 8-track railway facility, the biggest on-dock railway terminal of any port in the Mediterranean. Rail traffic at BEST has increased significantly in recent years, going from 3% of full import and export container traffic to 21% in 2021, saving an estimated 37,614 tons of CO₂ emissions versus road transport.

Synergy, the logistics operator of Hutchison Ports, has also consolidated its intermodal service between BEST and the southwest of France. Customers benefit from up to 11 days of savings in transit time with the new services through the Port of Barcelona and lower carbon emissions. Synergy's increased rail offer has enabled a saving of 13,000 tons of CO₂ emissions in 2021.

Hutchison Ports ECT has also significantly invested in becoming an established starting point and terminus for rail transport in Europe. ECT directly connects the deepsea traffic at the Maasvlakte with the rest of Europe through its 16-track rail terminal. Due to Rotterdam's location at the mouth of the river Rhine and the river Meuse, it also enables inland barges to directly connect to ECT's deepsea terminals.



Rail terminal at Hutchison Port BEST

PARIS – OPTIMISING A GREENER INLAND SUPPLY CHAIN

Acquired in 2000, [PARIS](#) is a wholly owned subsidiary of Hutchison Ports, which seeks to address the challenge of inherent inefficiencies created through manual planning of inbound and outbound logistics. Instead, PARIS uses advanced algorithms and parallel processing to provide optimised transport planning and features to effectively manage transport exceptions, reduce empty mileage and improve service performance. The software plans and optimises collection and delivery bookings in real-time using available rail, barge and truck transport options for the most efficient journey. Trips are also measured in terms of CO₂, SOX, NOX and PM10.

PARIS is able to save between 5% and 8% of a typical GBP20 million transport budget, including in excess of 1,000,000 kilometres of reduced empty distance travelled by truck resulting in approximately 1,000 tonnes of CO₂ emissions.



In 2021, PARIS extended its customer base to include ONE (Ocean Network Express), one of the largest shipping liners in the world. Together, PARIS is expected to reduce ONE's CO₂ emissions by 5% from increased efficiency in trucking reload/triangulation as well as through the increased multi-modal shift to also include rail and barge to its usual truck transport.

PARIS is expected to reduce ONE's CO₂ emissions by 5% from increased efficiency in trucking reload/triangulation

6. Next generation technologies and fuels

There are many winds of change influencing the maritime sector, with both multinationals concerned about their shipping carbon footprint and shipping liners looking to see zero-carbon shipping services delivered. The technology to a large extent, however, is still in the R&D phase with much trialling and testing ahead.

Hydrogen is an area the Group believes can play a hugely impactful and innovative role in a port environment. While there are still technical and operational issues to overcome, the Port of Felixstowe already has an ambitious plan to be a net-zero port and green hydrogen hub for the UK.

Hutchison Ports Port of Felixstowe



FREEPORT EAST HYDROGEN HUB

Freeport East, centred upon the Port of Felixstowe and Harwich International Port (both owned and operated by Hutchison Ports), will be one of the eight new Freeports in the UK. Working closely with a consortium of partners, Hutchison Ports is helping to position Freeport East as a world-leading green hydrogen hub and centre for excellence in sustainability over the next two years. At its peak, it is expected to produce 1GW of hydrogen, 20% of the 5GW target in the UK's Ten Point Plan for a Green Industrial Revolution. Among many other uses, the hydrogen produced will be used to power port infrastructure and equipment.



Hydrogen will also be produced via renewable energy from nearby offshore windfarms, with the extra demand bolstering investment and accelerating progress to the 40GW target of annual production.

In 2021, the Port of Felixstowe was also announced as one of the beneficiaries of the Department for Transport's Clean Maritime Demonstration Competition which will include a study detailing how Freeport East can become both a net-zero port and a net-zero energy hub for third parties and adjacent region.

It is predicted that Freeport East will generate 13,500 new jobs and provide a GBP5.5 billion economic boost over a 10-year period.

Climate risk and resilience

Cyclones, hurricanes and storm surges coupled with rising sea levels are increasingly realistic threats to port infrastructure, security and operational efficiency. The impacts of higher ambient operating temperatures for ports may impact operating parameters and working conditions. For example, higher temperatures may require more frequent equipment calibration as well as the possibility of heat-related illness amongst the workforce.

Given the critical role of ports in the global trading system and their potential exposure to climate related damage, disruptions and delays, enhancing their climate resilience is a matter of strategic socio-economic importance for the global economy and society as a whole, as outlined by the [United Nations \(UN\)](#).

In 2017, the UN Conference on Trade and Development conducted research on the impact of climate change on the operations and financial performance of 44 ports in 29 countries around the world. The research identified the following top five climate risks that may impact on future profits and assets of ports over the long-term:

1. Sea level rise causing changes in routes;
2. Increased temperature causing health hazards and additional operating costs;

3. Storms and waves causing liner delays and asset impairment;
4. Windy weather causing navigation routes to change; and
5. Flood and drought resulting in course changes and coastal erosion.

The potential impact and severity of these issues will vary from port to port through the 26 countries in which Hutchison Ports operates. In recent years, only one extreme weather event, namely Hurricane Dorian, the category 5 Atlantic hurricane that hit Hutchison Ports FCP in the Bahamas in September 2019, has caused damage to port infrastructure and the cessation of port operations. Aside from this event, extreme weather events have not caused major damage to Hutchison Ports' network. However, Hutchison Ports is aware that once in a hundred year events are becoming more frequent and that it needs to be prepared for a more extreme weather future.

To further assess the physical impacts of climate change, acute and chronic, Hutchison Ports commissioned a global climate risk assessment of its ports by a third party expert. Each port was assessed against the above-mentioned climate risks in relation to severity and likelihood of the event occurring. The assessment resulted in a hierarchy of most exposed ports in the long-term by climate risk type. A shortlist of ports have been identified for further detailed assessment.

Diversity and inclusion at Hutchison Ports UK



Creating a great place to work

Hutchison Ports recognises the success of the ports business is inherently linked with the hard work and dedication of its workforce.



Safety inspection at Hutchison Ports HIT

Occupational health and safety

Hutchison Ports works to ensure a safe environment for all Hutchison Ports employees and external users of its terminals and port facilities. In accordance with its Safety Policy in place, Hutchison Ports is committed to:

- Providing a safe working environment;
- Preventing accidents in the workplace; and
- Adopting preventive measures to eliminate hazards and safety risks.

Further procedures for hazard identification, risk assessment and emergency preparedness are in place relating to the safety of all employees and contractors.

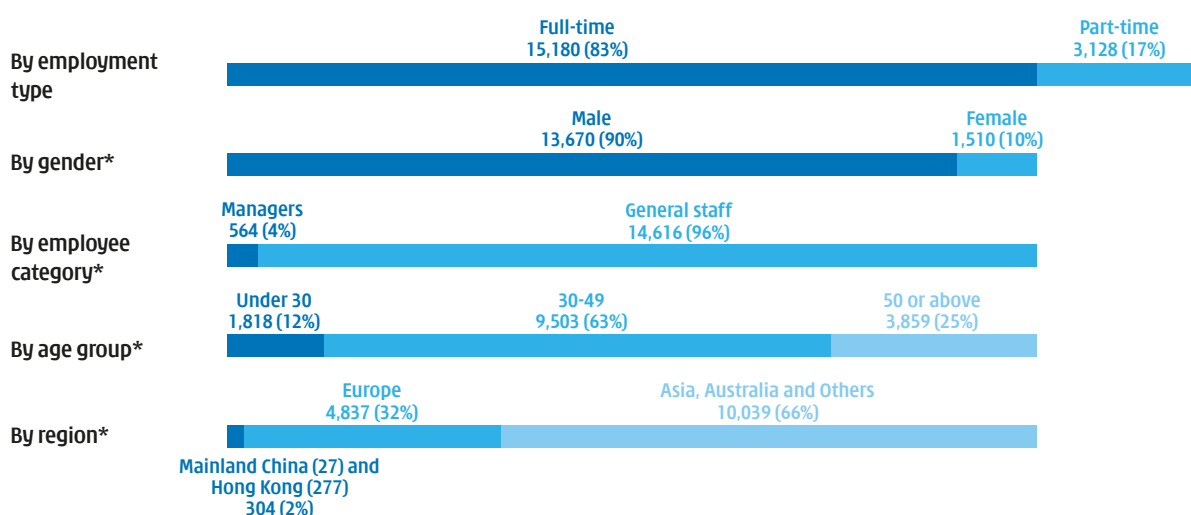
The Hutchison Ports Group Safety Committee ("SAFCOM") was established in 2011, with the headline remit to promote safe working and reduce accidents across the global network through the development of policies and procedures and the sharing of best practices.

SAFCOM is composed of the SAFCOM chairman, the secretariat (the Hutchison Ports Group Safety, Security & Environment team), six regional coordinators, as well as Hutchison Ports' head of Human Resources, head of Risk Management and the head of Engineering. The regional coordinators are the focal points for communicating decisions and recommendations made by SAFCOM within their respective regions. Every port is required to have its own Safety Committee to oversee performance management, monitoring and measurement of employees and contractors, and is responsible for liaison with the regional coordinators. Local Health and Safety teams are the teams on the ground and responsible for:

- Identifying occupational hazards employees may potentially be exposed to;
- Undertaking risk assessments; and
- Creating safe operating procedures to remove or reduce potential harm in all areas, in compliance with local legislations as a minimum standard.

SAFCOM has established a safety audit programme in which safety specialists conduct on-site audits to monitor port safety performance and compliance. The safety audit team uses assessment templates based on leading international safety standards and Group internal audit requirements. Safety audit reports, including the findings and the safety improvement actions, are submitted to SAFCOM and port management for review. During the pandemic, SAFCOM's normal programme of port visits and auditing was temporarily adjusted to use virtual audit instead.

Figure 18: Employee profile as at 31 December 2021



* full-time employees only

In 2021, Hutchison Ports continued its safety training programme with a further 1,157 participants receiving new training on electrical safety and lifting operation and lifting equipment safety management. During the year, Hutchison Ports also organised a safety leadership training and workshop for all the heads of business units to further align their safety leadership role and engagement.

Hutchison Ports employees also take part in employee health screening programmes. Focus areas include the prevention of work-related illness and occupational diseases, ergonomics in the workplace, stretching exercises for frontline staff, environmental health and noise protection.

In addition to Hutchison Ports division-wide coordinated programmes, every port also has its own tailored programme of initiatives and ways to communicate and enforce safety measures.

As part of the division's ongoing response to the impact of COVID-19, Hutchison Ports has introduced stringent safety precautions to ensure that its terminals are safe places for employees to work.

Every port has developed business continuity plans to ensure that Hutchison Ports can continue to provide port services safely for its employees, contractors and customers. Response plans include protocols for temperature checking, on-site testing and vaccination services for employees and family members, amended working practices, restricted travel, workplace access, social distancing and internal track and trace systems.

Tragically, three fatal incidents resulted in the deaths of two contractors and one employee in 2021 in relation to two

container-handling equipment incidents and one traffic collision incident. Accident investigation has been carried out for each individual case and actions were taken to further enforce the operational safety procedures on the terminal.

Health and wellbeing

Hutchison Ports' global health and wellbeing aims are to: cultivate a productive and healthy organisational culture; promote a positive and supportive work environment; foster employees' sense of belonging; and build employee wellness and engagement.

Health and wellbeing initiatives are part of daily life across the division with initiatives at the port-level such as annual medical check-ups, onsite gyms, sports teams, healthy food options in employee canteens, seasonal flu jabs, and wellbeing training specific to job requirements such as stretching exercises for truck driving relief.



Hutchison Ports Gdynia hosts 5km run competition in the terminal

BEWELL

In 2021, Hutchison Ports launched BEWELL, a global campaign dedicated to addressing a "whole-self" approach to wellbeing focusing on physical, emotional, spiritual, social, and intellectual health. The programme kicked off in October 2021 with a global awareness raising campaign followed by a series of webinars and e-learning.

The 2-year programme will serve to impact its three core pillars:

- *Care*: recognising the need to take care of the wellbeing of ourselves and co-workers;
- *Contribute*: acknowledging both the importance of personal contributions being recognised and rewarded to engendering workplace engagement and wellbeing, together with the satisfaction that comes from giving back collectively as an organisation to the local community; and
- *Collaborate*: showing that as a large global port network, together huge achievements can be made, and together a positive and healthy work environment can be co-created.



Attraction, retention and development

Hutchison Ports is committed to ensuring fair working practices, promoting an inclusive working environment, providing competitive remuneration and employee benefits, and offering rewarding learning and development opportunities.

Creating an open feedback culture and ensuring two-way communications are enabled through port-level employee engagement surveys. Results are reviewed by top management, communicated to employees and often supplemented with other support structures such as focus group discussions.

Globally a comprehensive succession plan is carried out at the managerial and leadership levels to identify successors and top-performing talent, as well as identify interventions to accelerate their development and career advancement in the organisation.



Leadership workshop at Hutchison Ports HIT

Learning and development

Hutchison Ports' Regional Development Programme is the flagship development programme designed for middle management leaders from across Asia Pacific, Europe, Latin America and the Middle East. With the third and fourth cohort programmes underway, the recently revamped virtual learning approach engages participants through bite-size leadership practices and business project presentations under the guidance of cross-regional leadership. Following the completion of the project, graduates join the expanding group of alumni that continues to provide a support network and opportunities for cross-port collaboration.

The MyPORT global programme is aimed at emerging talent and building the next generation of leaders. Participants complete three modules of virtual sessions, including actionable assignments, dedicated coaching and guidance along the way from business managers.



MYPORT leadership programme in action

Inclusion and diversity

With a large and diverse team globally, Hutchison Ports aims for all employees to feel accepted, included and that they belong to a large family of diverse cultures and backgrounds.

In 2020 and 2021, inclusion and diversity has been given added focus through new KPI setting to better monitor progress and identify opportunity areas for the global Ports Sustainability Committee to spearhead action.

The ports industry is traditionally male-dominated due often to the physically demanding nature of cargo handling. However, with the advent of technology, equipment automation and remote-controlled environments port opportunities are now more inclusive than ever. Nevertheless, Hutchison Ports' gender ratio currently stands at 90% male/10% female, which is typical for the industry, and there is more work for the whole industry to do to influence the broader system.

INCLUSION AND DIVERSITY AT HUTCHISON PORTS UK

Due to an increased focus on improving the diversity of its workforce, Hutchison Ports UK has begun to see the positive results of its inclusion and diversity strategy including a significant increase in the percentage of job applications from women. In 2021, 15.8% of applications received were from women, compared to 9.6% in 2020 and 8.6% in 2019. This has translated into 48 women joining the business in 2021.

Achievements during 2021:

- Expanded programme to include race, age, LGBTQ+ and disability as key new pillars;
- Launched new Equality and Diversity Policy;
- All employees in middle management roles and above completed new e-learning on the importance of creating an inclusive environment;
- Enhanced recruitment processes to be more inclusive. For example, anonymised all job applications to help eliminate biases in selection processes and increased job advertisements across a broader range of platforms to reach a wider, more diverse audience;
- Working towards the Government-recognised Disability Confident Committed Employer status for attainment in 2022; and
- Increased internal membership for internal Women's Network by 24%; hosted eight virtual events; and virtually celebrated International Women's Day.



Hutchison Ports UK's team members taking the International Women's Day pledge in 2021 to #ChooseToChallenge gender inequality



Hutchison Ports UK Women's Network visiting the Maersk rainbow container on its world tour

Investing in local community development and environmental protection

The division's ports around the world support and benefit local and regional development through their roles in creating jobs and transporting goods. They also partner with community organisations to play an active role in making their surrounding communities and environment better places to live and work.

Community support

Hutchison Ports' Dock School Programme is one of the division's most long-standing community programmes, in which each port globally partners with at least one local school to provide support such as sponsoring scholarships, equipment and other educational initiatives. For example, Hutchison Ports HIT supports the Tsuen Wan Trade Association School and the Hong Kong Institute of Vocational Education Tsing Yi with scholarships for disadvantaged students, and through facilitating school contests and opportunities for local students to learn more about Hong Kong's supply chains and the logistics industry.

Attracting new employees to the ports business and developing a future pipeline of talent is also an aim of the Dock School Programme. In 2021, Hutchison Ports HIT continued its "Start Your Journey @ Port Programme", a programme that provides a series of learning opportunities for local university students. The programme aims to increase students' knowledge and interest towards careers in the logistics industry through seminars, placements, scholarships and terminal visits.

During 2021, Hutchison Ports also prioritised supporting the rollout of COVID-19 vaccination efforts both through awareness raising campaigns of its positive benefits among employees and the community, as well as supporting the physical delivery of the vaccines and healthcare support to its local communities. For example, the division supported the storage and distribution of vaccines for the canal authority in Panama and donated medical supplies, including PPE and medical equipment, to hospitals in Myanmar. Teams in the UK, Hong Kong, Pakistan, Oman and Vietnam worked in partnership with local organisations to support local vaccination programmes as well as the donation of financial and logistics support for the distribution of medical supplies.

Hutchison Ports' volunteer teams also focus on local conservation efforts as part of the global GO GREEN campaign through planting trees and cleaning local green spaces for the community. Employees are also encouraged to adopt an eco-conscious mindset at work through landmark celebrations in the environmental calendar including Earth Hour and World Environment Day. The division's ports also engage in local biodiversity protection. For example, the terminals in Mexico collaborate with the local community to run a turtle protection programme for endangered species that visit the ports' local areas to lay their eggs.

Ensuring responsible business practices

With a global ports network spanning 26 countries and an ever-increasing focus on digital technology to run its critical business processes, both anti-corruption and cyber security are among two of Hutchison Ports' highest priority business risks.

Further, ensuring a responsible supply chain is also increasingly of focus for Hutchison Ports as it continues to expand its scope of focus.

Anti-corruption

The board and executive management team at Hutchison Ports has a zero tolerance approach to bribery and corruption. Hutchison Ports' policies, guidelines and procedures are established in these areas in local languages to deliver high standards of business ethics and integrity. Every employee must adhere to the ethical standards and legal requirements set out in the Group's Anti-Fraud and Anti-Bribery ("AFAB") Policy, the Code of Conduct, and additional relevant policies and guidelines. All business partners, suppliers and third party representatives are actively encouraged to also adopt these standards.

All employees are required to go through the Code of Conduct and AFAB training as part of the new-joiner orientation, which is supplemented with refresher training. Self-declaration of compliance to the Code of Conduct is also required annually. Further, to ensure key personnel are familiar with the relevant laws and regulatory requirements, all managers and supervisors from the Human Resources, Commercial, and Procurement departments, along with other selected individuals, are required to attend online training every two years. Hutchison Ports also provides an e-learning platform for employees to have better access to the AFAB policy and to ensure the policy is communicated to all levels in the organisation. Where higher bribery risk exposure has been identified, ports also request suppliers to participate in training.

Hutchison Ports aims to create an environment where employees and contractors are encouraged to query, speak-up and report any alleged infringements of company policies and ethics standards. Throughout the division there are various confidential mechanisms for reporting. For example, at Hutchison Ports UK, the Speak Up Line was created to provide a confidential channel to employees for reporting any alleged AFAB incidents.

All reported incidents are recorded on a register and reviewed by the designated senior management team at the Hutchison Ports head office on a regular basis.

Cyber security

Being a key player in the global logistics industry, and with so many of the systems and equipment automated, Hutchison Ports invests heavily in cyber security to safeguard its operations from serious disruption.

Hutchison Ports' approach is first and foremost guided by the Group-level security policy as well as the Group's Cyber Security Working Group.

Across Hutchison Ports, cyber security frameworks are aligned to ISO 27001 with larger ports including Hutchison Ports HIT, Hutchison Ports BACTSSA and Hutchison Ports ECT achieving certification.

Hutchison Ports maintains a division-wide security programme, covering key areas in security governance and risks. While email phishing is the prominent cyber risk, regular phishing simulations and security awareness training are delivered to employees in identified high risk positions globally. Regarding IT security, Hutchison Ports performs systems vulnerability scanning for all port infrastructure and applications on a regular basis to maintain clear visibility of the vulnerabilities and deployment of security patches. To deal with emerging threats in the operational technology space, the division also reviewed the operational technology assets used in the terminals and their cyber risks.

In 2017, the division began revamping its cyber security recovery programme with the aid of leading experts in cyber security to boost operational resilience against cyber-attacks and shorten

the recovery time from possible ensuing interruptions, especially against emerging ransomware threats. The revised programme, which sets a target Recovery Time Objective of 24 hours and makes adept use of cloud technology, is now being progressively rolled out to other ports having first been piloted in a small number of terminals with diverse geographical locations and operational characteristics. The project is strongly supported by the division's senior management, and multiple training events have been held in London and Hong Kong.

All ports are required to conduct regular mock cyber-attacks based on different scenarios in order to keep their recovery programme up-to-date. For these exercises, where law enforcement officers are often invited to observe, comment and participate, the port response times are analysed and assessed, and the results are used to further enhance programmes. These drills help personnel to stay calm and collected under the stress and strains that typically accompany a real life attack. Cyber drills had been performed by most of the participating terminals to verify the recovery capabilities, recovery times and incident response procedures.

Responsible supply chain

Hutchison Ports is currently expanding its sustainable procurement guidance across its ports to assist with pre-screening business partners across a wide range of sustainability issues including: business ethics, GHG emissions management, and human rights. Expansive sustainable procurement practices are already implemented at Hutchison Ports UK with contractor evaluations in the areas of labour practices, modern slavery, environment, legal compliance and health and safety.

PREVENTION OF ILLEGAL WILDLIFE TRADE

Hutchison Ports believes that all organisations working in cargo movement have a role to play in countering the threat to animal and plant species from illegal trade.

Hutchison Ports is a signatory of the Buckingham Palace Declaration, a commitment to take substantive steps to remove opportunities for wildlife trafficking by focusing on information sharing and secure reporting to law-enforcement authorities.

Hutchison Ports has also developed a partnership with TRAFFIC, the non-governmental organisation working globally on trade in wild animals and plants, and leverages their insights to deepen knowledge and understanding in how to flag potential incidents of illegal wildlife trade.





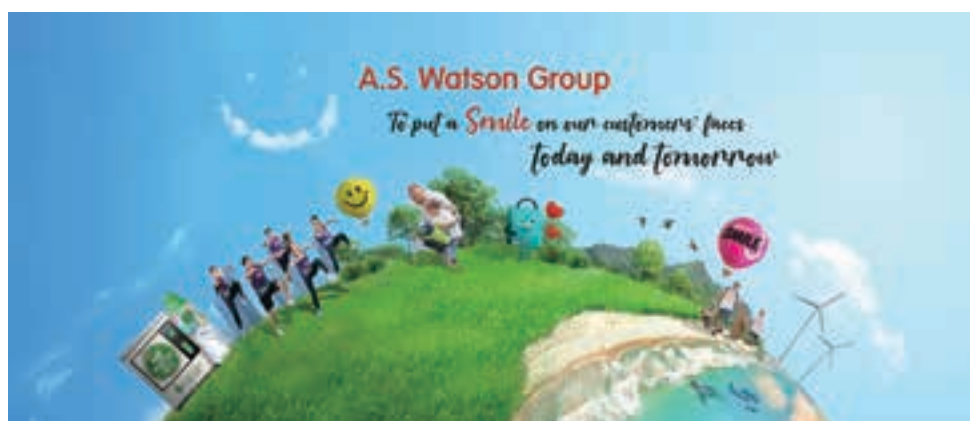
Watsons Malaysia

RETAIL

SERVING SOCIETY

A smile is the universal language of love that has no boundaries across cultures and races. It brings people together, making them feel confident and hopeful.

For 180 Years, the Retail division, A.S. Watson Group ("A.S. Watson"), has upheld a clear purpose of putting a smile on our customers' faces today and tomorrow. In 2021, this was updated to reflect the temporal importance of current and future generations:



This goes far beyond delighting customers with excellence in customer service and product delivery, to building a better environment and thriving communities in which they, as well as other stakeholders, live.











A.S. Watson recognises the importance of providing a better world for future generations, and as a leading global business, it is proud to take on this responsibility. At A.S. Watson, sustainability is not a choice, it is an imperative.

A.S. Watson's 2030 Sustainability Vision is therefore, front and centre of all A.S. Watson priorities as well as the business' strategic vision. A sustainable future is what customers and communities need most, and A.S. Watson is passionate about achieving this together with its people, customers, communities and suppliers.

Material topics, goals and progress

The following table highlights the material topics identified for A.S. Watson, as well as the relevant UN Sustainable Development Goals ("SDG"), division goals and progress made.

Material topics & SDGs	Goals	Highlights
Taking action on climate change  	<ul style="list-style-type: none"> Set science-based GHG emissions reduction targets to be validated by the Science Based Targets initiative. Calculate scope 3 emissions. 	<ul style="list-style-type: none"> New science-based targets set including: <ul style="list-style-type: none"> Reduce scope 1 and 2 emissions by 50% versus a 2018 baseline; Reduce scope 3 emissions from purchased goods and services and upstream transportation and distribution by 58% per dollar Economic Value Added by 2030 versus a 2018 baseline; and 33% of its suppliers by GHG emissions covering purchased goods and services and upstream transportation and distribution will have science-based targets (SBTs) by 2027. Detailed scope 3 footprint exercise completed with the help of third party carbon experts.
Creating a great place to work     	<ul style="list-style-type: none"> Be an employer of choice that ensures equal opportunity and that attracts and retains an engaged and diverse workforce. Provide ample opportunities to enhance employee skill-sets through on-the-job training and clearly defined progression pathways. Promote inclusivity of all cultures, truly reflecting the communities A.S. Watson serves. 	<ul style="list-style-type: none"> Celebrated "The Year of Love" and gratitude to its employees for its 180th anniversary. Improved response and engagement rates in global employee engagement survey. Additional inclusion and diversity questions added to Superdrug survey. Held Fit for the Future roundtable to discuss business critical skills needed to embrace new trends. Also launched the Digital Gym to drive engagement and skillsets needed for the digital transformation. Ongoing A.S. Watson Agile Leadership Series, Aspire Leadership Programmes, Ignite Leadership Programme, Retail Academy and Reverse Mentoring. Superdrug and Savers ranked as a Financial Times Leader in Diversity for the last three years.
Promoting a circular economy  	<ul style="list-style-type: none"> Achieve goals as part of signing up to the New Plastics Economy ("NPE") Global Commitment <ul style="list-style-type: none"> Target 1: 100% of plastic packaging to be reusable, recyclable, or compostable by 2025. Target 2: Include an average of 20% recycled plastic content across all Own Brand packaging by 2025. Help customers and the community recycle more and trial refill/reuse concepts. Donate surplus edible food to local food banks. Rolling out a new concept of greener stores. 	<ul style="list-style-type: none"> NPE progress against targets: <ul style="list-style-type: none"> Target 1: 46.6% achieved Target 2: 6.8% achieved Collaborated with brand partners (L'Oréal and P&G) to launch product take-back and recycling stations. New instore refill schemes launched in Malaysia and Hong Kong. By end of 2021, installed 84 reverse vending machines around Hong Kong and collected over 750,000 plastic bottles. Launched new partnership with Plastic Bank. Donated 3,500 tonnes of surplus edible food to Food Angel since 2012. Launched first store under the Sustainable Store Concept in the UK; to be further expanded during 2022.

Material topics & SDGs	Goals	Highlights
Offering sustainable products and services   	<ul style="list-style-type: none"> Stay in tune with, and respond to, changing consumer trends in favour of sustainability. Raise awareness on sustainable product choices offered in retail. Increasingly source more sustainable raw materials for Own Brand products. All Own Brand paper products and packaging to be made exclusively from more sustainable materials. Keep ensuring the safety, quality and traceability of Own Brand products. 	<ul style="list-style-type: none"> Superdrug, Kruidvat and Watsons leveraged customers' surveys on sustainability to understand consumer sentiment and guide direction. Watsons launched more than 1,600 products as part of its Sustainable Choices campaign in collaboration with global brand partners. 68% of Own Brand paper products made from more sustainable materials. PARKnSHOP sustainable sourcing: <ul style="list-style-type: none"> Over 100 plant-based meat alternatives offered at PARKnSHOP. Commitment to source only deforestation-free meat. Ranked number one by WWF among food retailers in Hong Kong for its sustainable seafood procurement policy. Rigorous internal testing and external assessment in place; Own Brand products tested against a restricted substances list; tracking software implemented for traceability monitoring.
Ensuring a responsible supply chain       	<ul style="list-style-type: none"> By 2030, ensure that 100% of Own Brand purchase value from high-risk countries (identified by amfori BSCI) will be assessed for: <ul style="list-style-type: none"> Social compliance through amfori's Business Social Compliance Initiative audits (or others endorsed by A.S. Watson); and Environmental compliance through amfori BSCI's Business Environmental Protection (or others endorsed by A.S. Watson.) 	<ul style="list-style-type: none"> Social compliance assessed for over 95% of Own Brand purchase value from high-risk countries (direct sourcing). Environmental compliance assessed for over 65% of Own Brand purchase value from high-risk countries (direct sourcing). 594 factories audited in 2021 under A.S. Watson sustainable supply chain programme.
Investing in developing thriving and resilient communities  	<ul style="list-style-type: none"> Develop programmes that are mutually beneficial to business and the community. Maintain long-term partnerships and support local communities and charities via donations, sponsorships and employee volunteering. 	<ul style="list-style-type: none"> In 2021, donated HK\$43.9 million to local community organisations. Over 8,600 A.S. Watson volunteers contributed 60,800 hours to serve over 223,800 community members. Active part in the community rollout of the COVID-19 vaccine.
SDG 17, "Partnerships for the goals", underpins action on all material topics and enables the best possible impacts through collaboration and working with relevant partners.		

Taking action on climate change

Climate change affects every one of A.S. Watson's stakeholders, from every customer to every worker in its global supply chain. While there is a lot more to achieve in this area, it is an issue A.S. Watson takes very seriously and is making significant progress towards its GHG emissions reductions targets.

GHG emissions reduction target

In 2019, A.S. Watson released a GHG emissions reduction target of reducing scope 1 and 2 emissions by 40% by 2030 versus a 2015 baseline. By end of 2021, A.S. Watson had already surpassed that target with a figure of 42.6%.

To replace this goal, A.S. Watson is developing new targets to be validated by the Science Based Targets initiative. An extensive engagement process was undertaken with departments materially responsible for GHG emissions generation and central to decision-making, as well as engaging with the division's top suppliers. As a result of this engagement, the following targets have been developed:

- Reduce scope 1 and 2 emissions by 50%, versus a 2018 baseline;
- Reduce scope 3 emissions from purchased goods and services and upstream transportation and distribution by 58% per dollar Economic Value Added by 2030, versus a 2018 baseline; and
- 33% of suppliers by GHG emissions covering purchased goods and services and upstream transportation and distribution will have science-based targets by 2027.

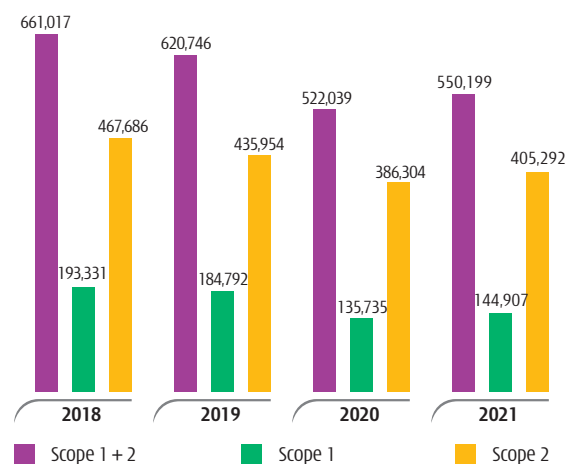
To show its commitment to leading practice in alignment with a 1.5°C pathway, A.S. Watson has publicly committed to having its target validated by the Science Based Targets initiative.

GHG emissions performance

In 2021, A.S. Watson's GHG emissions increased by 5.4% versus 2020, but decreased by 16.8% versus 2018. The increase in GHG

emissions in 2021 is due to stores re-opening and resumption of normal business following 2020 which was largely marked by lockdowns. Overall GHG emissions reductions since 2018 are a result of the procurement of renewable electricity and a focus on energy reduction measures including LED rollouts in new stores and major refits.

Figure 19: Scope 1 and 2 GHG emissions performance (tCO₂e)



Scope 3

In 2021, A.S. Watson commissioned a third party expert to compile its scope 3 footprint baseline. While A.S. Watson has been tracking several scope 3 categories in the past, a comprehensive view, particularly of supplier GHG emissions was previously less known. This baselining exercise revealed a scope 3 footprint of 7,065,007 tCO₂e, accounting for 91.9% of A.S. Watson's total carbon footprint that year. A.S. Watson has benchmarked this as being aligned to similar results by the retail industry. The main hotspot scope 3 categories identified are use of sold products, purchased goods and services and upstream transportation & distribution, which account for 44%, 26.5% and 16.3% of GHG emissions respectively, or 86.8% combined.

Figure 20: Breakdown of scope 1, 2 and 3 emissions

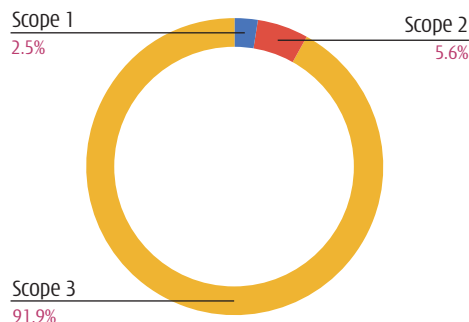
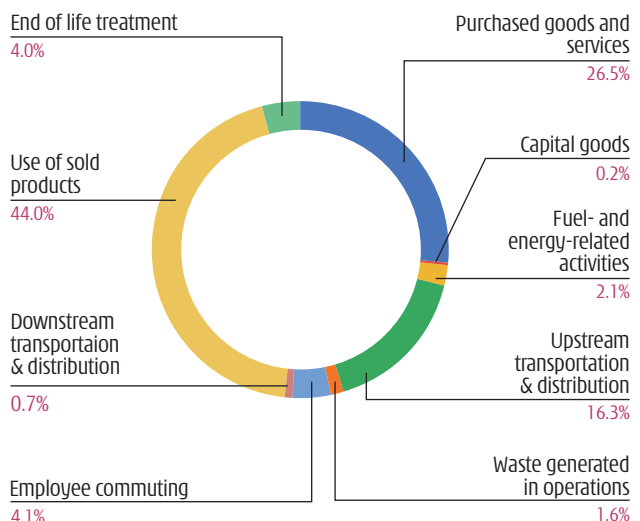


Figure 21: Scope 3 footprint by scope 3 category



Energy efficiency

With 74% of A.S. Watson's GHG emissions globally attributable to electricity consumption in 2021, creating efficiencies on the consumption of grid electricity is a top priority. Energy consumption in 2021 increased by 5.7% versus 2020, and decreased by 3.2% versus 2018 mainly due to initiatives linked to the use of more energy-efficient equipment, such as lighting replacement, HVAC optimisation, and behaviour change.

A.S. Watson's global energy management programme is led by Global Sustainability Committee's task-force on Energy and supported worldwide by 37 energy champions embedded within the business who are responsible for monitoring local energy savings initiatives.

LED lighting can save up to 80% in energy consumption versus inefficient incandescent alternatives. A.S. Watson is therefore undergoing a large-scale rollout of LED lighting for new stores and major stores refits. At the end of 2021, 63% of stores were fitted out with LED lighting and A.S. Watson targets a figure of 75% by 2025.

Since 2018, A.S. Watson has leveraged Schneider Electric's data management system, Resources Advisor, which allows A.S. Watson to actively monitor energy consumption globally (among many other sustainability KPIs). Metering is another tool that has helped A.S. Watson, particularly at the store level in Europe, to track energy consumption in a granular manner.

A.S. Watson UK has also partnered with ista, one of the Group's Infrastructure businesses which specialises in energy management and metering, to undertake energy audits and training to better identify energy efficiencies and behaviour changes in stores, distribution centres and offices. For example, leveraging ista's MinuteView platform which assists in forensically examining energy management, A.S. Watson's Southern Regional Distribution Centre was able to show that installing LEDs reduced average daily consumption by more than 2,000 kwh per day. During 2021, ista also helped to upgrade and centralise the metering and management of all electricity data across the UK and Ireland for better streamlining and decision-making with the end goal to enable energy reductions and cost savings.



A.S. Watson also has supply chain standards in place to favour the procurement of fixtures, fittings and equipment that meet best practice energy efficiency standards, as well as ensure store retrofits and construction are as energy efficient as possible.

Simple behaviour changes can also materially reduce energy consumption. A.S. Watson therefore has worked on implementing control measures for employees as part of standard operating procedures as well as engaging employees in campaigns and educational initiatives for them to understand their impact and role they can play.

Greener fleet

The use of diesel to power the A.S. Watson fleet accounts for nearly half of its scope 1 emissions and therefore is an area A.S. Watson prioritises. Driver training, route planning and load optimisation are fundamental parts of A.S. Watson's fleet management, with particular success at Superdrug, in order to get products to and from stores in the most efficient way and with the lowest possible fuel consumption.

As a result of the COVID-19 pandemic, the volume of sales via eCommerce channels has grown significantly, presenting new challenges in balancing these new customer needs for increased home delivery versus the environmental impacts created as a result.

Focused efforts to offer customers the additional option to move from the traditional “Click & Deliver” model towards a more customer centric “Click & Collect from Store” model has shown success in a number of markets. These customer orders fulfilled from warehouses means that transportation to the point of customer pick-up takes advantage of the existing store transportation network thus negating the need for an additional shipping channel.

For customers preferring home delivery, widespread implementation of the eCommerce “Home Delivery from Store” service gives A.S. Watson the capability to leverage its brick and mortar estate. Customer orders are picked up at stores located at the nearby required delivery points. This greatly reduces travel distances from the point of pick-up to the point of customer delivery when compared with a centralised eCommerce warehouse facility. It also provides customers with a shorter order to delivery time frame.

Both of these customer service options contribute to reducing fuel usage, and the associated GHG emissions, through fewer on-road hours for vehicles.

With the same intention, to maximise the loads and avoid empty vehicles travelling back to distribution centres, A.S. Watson backhauls store waste to recycling centres in Europe. This avoids the need for third party waste management companies going to every store and therefore avoids additional GHG emissions from those journeys.

A.S. Watson encourages all business units to favour fuel efficient delivery vehicles. Since 2016, Superdrug has replaced all delivery vehicles with Euro 6 engines, the highest emissions standard for

vehicles, and has installed particulate filters to further reduce impacts on air quality. Market assessments of electric vehicle alternatives are also ongoing with replacements being made where feasible, in addition to engagement with logistics vendors to use electric vehicles. In 2021, warehouse deliveries to stores in Guangzhou, Shenzhen and Foshan transitioned to 100% electric vehicles.

In 2021, the A.S. Watson Supply Chain sustainability tool kit was supplemented with new standards to encourage the use of lower impact fuel types and enable business units to measure their fleet performance versus Euro standards. Fuel-efficient driving techniques are also promoted. For example, across 13 cities in China, A.S. Watson has implemented a night-time delivery programme covering 256 stores which increased store deliveries per truck by 30% versus the original daytime delivery schedule.

In 2022, the future tendering of fleet and transportation services will include sustainability criteria under the pre-qualification questionnaire for vendors.

Renewable energy

A.S. Watson has achieved 100% renewable energy in three major European markets (the UK, Belgium and Netherlands) meaning that Superdrug, Savers, The Perfume Shop, Kruidvat, Trekpleister and ICI PARIS XL are all powered entirely by green electricity.

Renewable electricity therefore makes up 86% of A.S. Watson's European portfolio and 20% of A.S. Watson's total electricity consumption globally. Always striving for 100%, A.S. Watson will be adopting green electricity as options become available, but challenges remain in Asian markets where renewable energy infrastructure is less mature.

Superdrug's EURO 6 fleet



Creating a great place to work

As at 31 December 2021, A.S. Watson employs 126,644 full-time and part-time employees. Their talent and commitment to customers and pride in the work they do are fundamental to A.S. Watson's long-term growth and success. A.S. Watson is therefore committed to being a place where people can develop, thrive and receive equal opportunity.

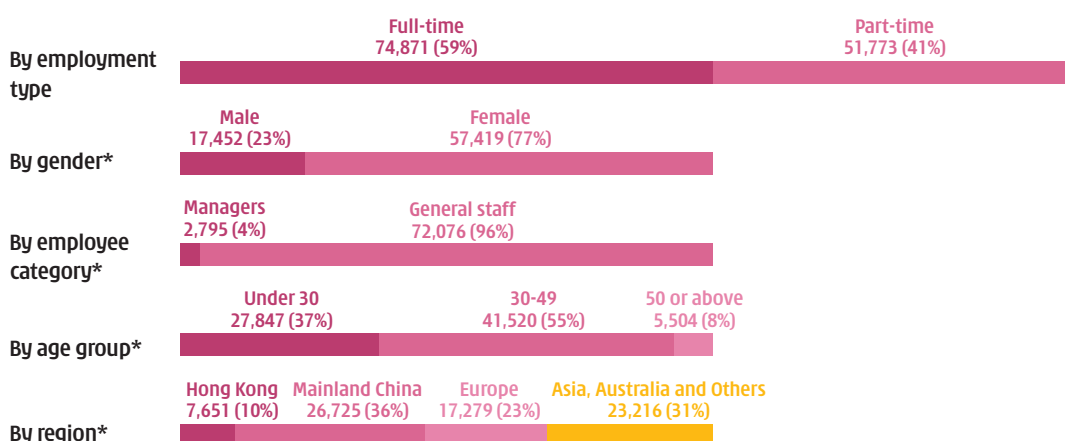
Talent attraction and retention

The A.S. Watson team is its most important asset and the division is therefore continuously working on ways to attract and retain talent.

To celebrate the 180th anniversary of A.S. Watson, A.S. Watson teams globally celebrated this milestone by theming it as "The Year of Love". This year spotlighted the gratitude shared for all colleagues, customers, community members and business partners that have been part of the business' successes over the years, together with the hard work, dedication and resilience required throughout the pandemic.

Through internal and external communications campaigns, the themes of love and gratitude were made the focal points of attraction and retention initiatives of current and future employees such as through employer branding activities and new employee orientation. The A.S. Watson Heroes campaign also sought to further celebrate employees for their hard work and dedication,

Figure 22: Employee profile as at 31 December 2021



* full-time employees only



particularly through these challenging times. Team members were encouraged to nominate and vote for colleagues, among which 40 were selected for recognition awards throughout the year.

A.S. Watson offers competitive benefits and pay in all stores, distribution centres and corporate offices. It offers all employees a broad range of non-statutory benefits such as staff discounts and long service awards.

Employee engagement

Listening to employees is important to A.S. Watson and it gathers feedback through employee engagement surveys, which are carried out at least bi-annually, and more frequently depending on the individual businesses. The bi-annual A.S. Watson global employee engagement survey held in 2021 revealed notable increases in both score and response rate versus pre-pandemic levels indicating positive results to how the Group has maintained high engagement levels during the pandemic. Survey results were shared with employees to ensure transparency and accountability for acting on results. Over the years, employee engagement surveys have influenced areas such as diverse as office design, leadership style and organisational culture to brands of free drinks provided and healthy snacks provided in break areas.



A.S. Watson wellbeing campaign

A.S. Watson expands and supplements these surveys with further ad hoc surveys to address discrete events and trends. For example, in 2021, Superdrug & Savers expanded their annual employee engagement survey to include new questions on inclusion and diversity with the aim to gain greater understanding of the employee base make-up, how employees identify, and how engaged the different communities are. Positively, the results showed that there were little differences in overall engagement levels between different identities.

The outputs also helped define key work streams within the Everyone Matters strategy, Superdrug and Savers' dedicated inclusion and diversity strategy. For example, the survey showed that trans and non-binary colleagues felt less able to be themselves at work which has resulted in more education and conversation on trans and non-binary experiences, the importance of using correct pronouns, the launch of the Gender Identity & Expression policy, and pronoun badges for store colleagues.

Employee wellbeing

A key focus of employee wellbeing in 2021 was around handling the transition to returning to pre-pandemic work practices. At the beginning of 2021, A.S. Watson conducted a Mental Wellbeing Survey to understand what support its people needed to ensure targeted efforts.

Following the results from the Survey, A.S. Watson launched a pilot to train Mental Health First Aiders in Asia and Europe through the three-day accredited course by Mental Health First Aid England. These representatives from the People teams globally could then offer the appropriate and necessary support to colleagues in need.



Mental Health First Aiders in Hong Kong receiving their certificates following a 3-day workshop

SUPPORTING EMPLOYEE WELLBEING DURING THE PANDEMIC

A.S. Watson recognises the pandemic has put exceptional stress on society, including its employees. To support teams, and let them know management is listening and cares for their wellbeing, A.S. Watson Benelux launched #StayConnected for office employees and #healthytogether for store and distribution centre employees, to encourage team cohesion, show appreciation for each other, and to ensure employees feel healthy in the workplace.

Highlight initiatives from these programmes which continued throughout 2020 and 2021, and many of which were inspired by employee ideas, include:

- **The eBarista café:** Every Monday the participants of the eBarista café were randomly matched up for a chance to have a virtual coffee with a new or old friend.
- **eCards:** eCards enabled colleagues to share with each other words of appreciation or simply to say to a colleague that they are missed.
- **Inspiration Thursday:** External speakers were arranged with webinars held for employees to learn about a variety of topics, including wellbeing and the psychological effects at play while working from home for long stretches. The team also arranged sessions for internal senior management to share advice on how to stay well, alongside sharing links to inspiring podcasts, TED talks and articles.
- **Support hotline:** A hotline was launched to allow employees to seek additional support.
- **Health and wellness:** To encourage keeping active, the app "Ommetje", or "walk around the block", was introduced to challenge employees to earn the most points by ensuring they take walks every day. To further inject some fun into the working day, the team also got employees involved in the popular Jerusalema Dance Challenge. During "Vitality Week" in 2021, stores were sent skipping ropes, flyers on staying healthy and stores were in the chance to win a boot camp session for the whole team. Fruit baskets and vitamins were also shared with retail employees to encourage healthy eating and boosting immunity.
- **Hybrid working support:** To support employees in the transition to hybrid working in the office, an employee survey was issued to understand what support was needed as well as proposed practices to be discussed between team members and line managers to support work-life balance.

A.S. Watson Benelux launched #StayConnected and #healthytogether to support team wellbeing and cohesion

Learning and development

Training programmes are continuously refreshed to respond to the changing needs of customer and employees. While training and development programmes are driven at the local level to respond to local needs, there are several programmes carried out globally to develop senior and emerging leadership talent.

The A.S. Watson Agile Leadership Series is designed to develop a pool of high-performing senior executives with the strategic leadership skills needed to move into a more senior leadership role within the business. All modules are designed around the A.S. Watson Leadership Capabilities and key strategic drivers are updated every year to reflect key business trends. The 2021 programme included modules on: Agile Leadership 2.0 & the Future of Work, Digitalisation & Analytics Driven Business Acumen and Driving Customer-Focused Results.

A.S. Watson also offers structured development programmes for managers with potential to move into a senior management role under the Aspire Leadership Programme which covers critical business skills over four workshops. The four workshops included: Leading Self, Leading Others, Leading Change and Leading Business.

A.S. Watson's learning and development programme is constantly evolving to encourage innovation and to keep in tune with changing trends such as the digital transformation. According to the World Economic Forum, half of the global workforce will require reskilling by 2025, and nine out of 10 jobs will require digital skills by 2030. Recognising the rapid rate at which the world is being changed by technology, A.S. Watson is committed to ensuring its people are not left behind.

THE A.S. WATSON RETAIL ACADEMY

A.S. Watson is proud to be the first retail group in Hong Kong to offer 17 Qualification Framework-recognised programmes for the acquisition of retail skills, knowledge and best practice.

The aim of the Retail Academy is to provide a platform of continuous learning for retail professionals and develop a pipeline of retail talent equipped with the necessary skills and knowledge while also enhancing engagement at work. The accreditation process ensures that training programmes meet the required standards and stringent quality assurance processes developed by the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ).



In 2021, A.S. Watson became the first business in Hong Kong to offer these qualifications online through self-directed learning and assessment activities delivered through an in-house digital learning platform, setting a new local standard for professional training for the industry. The Qualification Framework extends across all retail business units in Hong Kong and consists of a range of topics from Certificate programmes through to Advanced Diploma levels.

To further understand the skills and capabilities that will be required in the future, A.S. Watson's senior leadership held an A.S. Watson Fit for the Future virtual roundtable to discuss how it can best prepare and equip itself to be successful in the future. Looking ahead five years, A.S. Watson identified the business-critical roles and skills, opportunities for reskilling, and the behaviours needed to foster a culture that embraces dynamic change. A series of skills toolkits and talent attraction initiatives will be launched from 2022 in five areas including: Team Effectiveness; Digital Fluency; Mental Flexibility; Coaching & Empowering; and Data Analytics.



In 2021, A.S. Watson also launched the "Digital Gym" with the aim of upskilling team members through learning modules that range from developing digital basics to more advanced digital skills. The dedicated supporting mobile phone app has been designed for leaders to highlight latest Digital Gym news, drive engagement and offer regular bite-size learning content. Customer and eCommerce teams across regions have also collaborated to create the "Digital Fitness Exchange" to share best practices with each other on driving customer engagement while leveraging digital content and technology.

Inclusion and diversity

A.S. Watson's aim is for all its teams to reflect the diversity of the communities in which it operates. This means having an organisational culture which promotes inclusion, diversity and respect.

A.S. Watson aims to be an employer of choice that attracts a diverse workforce, harnessing people's unique backgrounds and talents which contributes to not only a more inclusive environment, but ultimately a more successful business.



Superdrug celebrates International Women's Day and this year's theme, "Break the Bias"



EVERYONE MATTERS

At Superdrug and Savers, inclusion and diversity is a key part of its business strategy.

Everyone Matters is its inclusion and diversity strategy that focuses on six areas of inclusion: age, disability, gender equality, LGBTQ+, race & ethnicity, and social mobility.

The corresponding pillars and programme highlights include:

1. Access All Areas (relating to Social Mobility)

Aims: Talent is everywhere, but opportunity is not. Through quality work experience, apprenticeships, development programmes, and mentoring, the business is aiming to widen access to those from all socioeconomic backgrounds.

2021 highlights:

- Offered 328 apprenticeships, with 146 learners completing qualifications and 50% going on to secure a permanent role within the business.
- Offered over 2,000 places through the UK Government's Kickstart scheme, which is aimed at creating new job placements for 16-24-year olds on Universal Credit who are at risk of long-term unemployment.

2. BAEM (Black, Asian and Ethnic Minority)

Aims: To be the employer of choice that attracts a diverse workforce, harnessing peoples' unique backgrounds and talents for the benefit of individuals and customers.

2021 highlights:

- Signed up to the Race at Work Charter pledge to improve race representation in the workplace.
- Signed up to The Halo Code, promising members of the Black community that they have the "freedom and security to wear all afro-hairstyles without restriction or judgment".
- Focused on career coaching and mentoring sessions for BAEM employees.
- Ran a series of educational webinars focused on Active Allyship with external speakers.

3. Gender Equality (includes parenthood and carers)

Aims: To create a fair and supportive workplace for people of all genders, to champion and inspire women in the business, and to build a strong pipeline of diverse female talent to ensure a gender balance in future leadership teams.

2021 highlights:

- Launched a new Domestic Abuse policy and toolkit, provided training, shared resources, and encouraged dialogue about an often difficult, taboo subject.
- Launched a new Menopause policy, toolkit, and e-learning and webinar series with a view to encouraging conversations about a subject faced by the business' majority female workforce.
- Partnered with Working Families to enhance the job design process to make flexible working accessible in all roles.
- Focused on new parents coming back into the workplace through support, guidance and reviewing all family friendly policies to make further progress.



4. LGBTQ+

Aims: The LGBTQ+ network enables space for LGBTQ+ colleagues to share experiences and challenges as well as finding role models that show them that they don't need to hide any aspect of who they are.

2021 highlights:

- Launched a new Gender Identity and Expression policy and supporting toolkit.
- Focused on education around trans and non-binary identities including a senior leader workshop, a new LGBTQ+ e-learning module and a bespoke session for healthcare teams.
- In collaboration with Unilever, ran a successful Pride campaign with activities, webinars, and events, culminating in raising over GBP50,000 for LGBT Switchboard.

5. Disability

Aims: Building awareness of both visible disability and non-visible disability across the business; supporting colleagues that live with disabilities or long-term health conditions; breaking down stigmas and removing the labels attached to disability overall; and working to ensure that Superdrug and Savers are inclusive and accessible workplaces to all.

2021 highlights:

- Signed up to The Valuable 500, a global community working to revolutionise disability inclusion through business leadership and opportunity.
- Focused on accessibility in the workplace and ran a campaign encouraging all employees to learn the basics of sign language.

In 2022, a sixth pillar will be added to the Everyone Matters strategy to celebrate the importance of welcoming people of all ages and a multi-generational workforce. This will further enable the business to harness the greater diversity of experience, generations, and skill that an age diverse workforce brings to the workplace and support team members through all career and life stages.

Each pillar has an employee network and a steering group, an actively involved executive sponsor, a lead from the People team, and is represented at the overarching Everyone Matters Steering Group, including Superdrug's CEO, Peter Macnab and Savers' Managing Director, Doug Winchester.

Senior leaders and recruitment teams have attended inclusive leadership training, and inclusion and diversity is now part of every new employees' induction, and development and leadership programmes. All employees have access to resources, online learning, webinars, and bespoke workshops on a range of inclusion subjects.

Because of these efforts, Superdrug has been ranked as a Financial Times Leader in Diversity in 2021, 2020 and 2019 for the year following.

Promoting a circular economy

Building a circular economy means moving away from the traditional take-make-waste extractive industrial model, to keeping perfectly good resources within the manufacturing loop for as long as possible. In a circular economy, waste is no longer considered waste, but instead a resource.

The benefits of, and means to achieve, a circular economy are wide-ranging but notably it means less extraction of already scarce natural resources, less pollution to land, air and water and significant reductions in GHG emissions. In practice this means reducing waste to an absolute minimum, replacing higher impact materials with lower impact alternatives, reusing wherever possible and then finally recycling waste where the other options are exhausted. A.S. Watson adopts these “4R’s” as an operational mindset in its aims to contribute to a circular economy.

In 2021, A.S. Watson generated 77,595 tonnes of non-hazardous waste relating to operational waste generated in stores, distribution centres and manufacturing sites with the major hotspot area relating to packaging waste. Another topic of focus, however only relevant to food retail in Hong Kong is food waste.



Watson Hong Kong launches plastic reborn campaign with P&G

Packaging waste


When it comes to waste reduction and building a circular economy, it is fundamental to look at the whole system, beyond the operational waste created on-site to the products and packaging customers are sent home with, or delivered to them, and therefore what eventually ends up in their bins.

Packaging plays a fundamental role in protecting products and where relevant to A.S. Watson’s food retail operations, preventing food waste. There is however a cost to the environment if it is not properly collected and recycled, and will end up polluting land and waterways.

Packaging commitments

Over 80% of A.S. Watson’s packaging relates to plastics and paper; it has therefore focused packaging efforts and goals on these two materials.

In 2020, A.S. Watson took an important step by signing up to the New Plastics Economy Global Commitment (“Global Commitment”), led by the Ellen MacArthur Foundation, an organisation widely considered as the foremost thought leader in building a circular economy.

As a signatory, A.S. Watson has committed to several targets and to annual reporting against these goals (which are publicly tracked under the Global Commitment and available [here](#) .

Global Commitment targets:	Status
100% of plastic packaging to be reusable, recyclable, or compostable by 2025 (including Own Brand product packaging, eCommerce parcels and in-store carrier bags)	46.6% achieved
20% recycled plastic content in Own Brand packaging by 2025	6.8% achieved

Under the Global Commitment, A.S. Watson must also make tangible progress against the broad goals set out by the Global Commitment to:

- Take action to eliminate problematic or unnecessary plastic packaging by 2025 through actions such as reducing plastic packaging weight, replacing plastic packaging with more sustainable materials where possible, and banning polyvinyl chloride (“PVC”); and
- Take action to move from single-use towards reuse models by 2025 by providing customers with options of refill at home and refill in-store, where relevant and possible.

Regarding paper packaging, the division aims for its Own Brand paper packaging to be made exclusively from sustainable sources by 2030; it is currently tracking at 68%. A “sustainable source” for paper material is defined as being either certified by the Forest Stewardship Council (“FSC”) or the Programme for the Endorsement of Forest Certification (“PEFC”), or being made with 100% recycled paper content.

Circular packaging

A.S. Watson monitors waste generated by Own Brand products through continuous monitoring of waste quantities and types. The division has developed an Own Brand Sustainable Packaging Guideline and Policy to support internal Own Brand development teams and suppliers in reducing the amount of packaging used in Own Brand products, without compromising technical performance, product safety, quality and overall regulatory compliance.

Recent highlights of putting circular economy approaches into practice include:

Reduce/Replace

- As part of ongoing efforts to remove packaging from fruit and vegetables, PARKnSHOP removed 90,000 plastic trays deemed unnecessary packaging in 2021 versus the same offerings in 2020. Work is also on track to remove all foam trays and transition to recyclable trays for Own Brand meat and seafood products.
- Watsons Taiwan customers were offered additional loyalty points for bringing their own shopping bags. An estimated 295,000 plastic bags were saved in 2021 as a result of this initiative.
- A.S. Watson food retail outlets in Hong Kong became the first retailer in 2019 in the city to stop the sales of single-use plastic straws, and to offer alternatives made with metal or bamboo. The division is also already selling a growing range of sustainable alternatives to single-use plastic cutlery, plates and cups.
- Since January 2020, PARKnSHOP stopped selling any rinse-off personal care products containing microbeads.

Reuse/Refill

- To encourage the public uptake of reusable water bottles, Watsons Water has installed 40 smart water refill stations at schools and public spaces in 2021, with the plan to install 160 more during 2022 and 2023 for the Hong Kong Government's Environmental Protection Department. A.S. Watson also partnered with PATH @ in 2021 to introduce refillable aluminum bottled-water made from 70% recycled content and are 100% recyclable.
- Watsons Malaysia and Hong Kong introduced a refill station for its Own Brand "Natural by Watsons" personal care product range. Learnings from these pilots will accelerate the refill expansion to other markets in 2022.
- At PARKnSHOP customers are encouraged to bring their own containers to certain counters in exchange for monetary incentives at 20 stores around Hong Kong.

- GREAT became the first supermarket chain in Hong Kong to offer a refill station for laundry and personal care liquid by New Zealand's Ecostore in 2019.

Recycle

- In partnership with P&G, under its Plastics Reborn partnership, Watsons provides convenient collection points across Hong Kong for the public to deposit hard-to-recycle plastics personal care products. Recycling is then arranged by the Hong Kong-based circular economy service, The Loops. In 2021, over 200,000 plastic containers were recycled.
- In 2021, Watsons Taiwan collaborated with L'Oréal to launch a new makeup and skincare container recycling programme across 20 Watsons stores in Taipei. Customers returning their empty skincare and makeup containers from any brands for recycling were then offered redemption rewards from Maybelline. Based on positive feedback, this will be further expanded in 2022.
- In 2019, Watsons Water was the first beverage bottler in Hong Kong to launch a scaled plastic bottle container collection programme with the use of reverse vending machines ("RVMS") to encourage Hong Kong to recycle more. By the end of 2021, A.S. Watson had installed 84 RVMS operating around the city, offering customers incentives such as cash rebates, shopping coupons and loyalty points for bringing their plastic bottles to the RVMS. As part of this programme, A.S. Watson is working with the Hong Kong government's Environmental Protection Department's RVM Pilot Scheme to install another 60 units in 2022. It aims to install 400 RVMS in Hong Kong by 2025 to facilitate its goal of collecting an equivalent of 100% of water bottles sold in Hong Kong by Watsons Water by 2030. Through collection programmes with its network of RVMS, Watsons Water collected over 16 million empty water bottles from consumers in 2021.
- Watsons Water was also the first brand to incorporate 100% recycled polyethylene terephthalate ("rPET") in its water bottle packaging sold in Hong Kong (since 2016). To increase the ease of recycling, Watsons Water was also the first bottler in Hong Kong to make sleeveless bottled water available to customers.
- FORTRESS partnered with a local NGO, Caritas, to collect used laptops from customers and the public after which they are repaired and donated back to low-income families. A total of 300 laptops were collected in 2021 in the first phase of the programme.
- In 2021, A.S. Watson partnered with Plastic Bank to engage the community in developing countries to collect empty plastic bottles to prevent them from entering the ocean. A total of over 830,000 bottles were collected through this partnership with a target to collect over 2.5 million bottles by Q3 2022.

Greener stores

In 2021, A.S. Watson finalised and launched its Sustainable Store Concept. While this is an ethos that is not new to A.S. Watson, this concept has been formalised and translated into a toolkit for rollout across all stores. The concept focuses on multiple areas:

- **Sustainability engagement:** Inspiring a culture of making more sustainable choices. Involving more customers in recycling and community engagement efforts.
- **Energy efficiency:** Implementing energy efficiency controls across the building life cycle from construction, to operations, to procurement.
- **Responsible materials:** Sourcing responsible and sustainable materials when building and merchandising stores and reducing plastic bag use in-store.
- **Waste diversion:** Reducing waste from product and store materials. Increasing store equipment recycling at end-of-life.
- **More sustainable products choices:** Providing more sustainable products to customers to promote sustainable lifestyles.
- **Renewable energy:** Supporting the growth of green energy through the procurement of renewable electricity.
- **Wellbeing:** Promoting a safe and healthy environment for all team members and customers.

LAUNCH OF THE GREENER STORE CONCEPT IN PETERBOROUGH



A.S. Watson launched its first store under its new Greener Stores Global Framework through Superdrug in Peterborough, the UK. Building materials, signage and artwork favours recycled content material where possible that are fully recyclable at end-of-life. For example, ceiling tiles made from bio-soluble mineral wool, clay and starch which are also recyclable.

The stores thoughtful design also reduces the number of light fittings needed, and make use of LED lighting and a AAA-rated energy efficient air-conditioning system.

Customers can find a wide range of sustainable health and beauty products at the new store, including Superdrug's Own Brand sustainable ranges as well as other sustainable brands such as Palmer's, Weleda and Wild Earth.

Food waste

According to the Food and Agriculture Organization of the United Nations, one third of food produced for human consumption is lost or wasted globally, which equates to 1.3 billion tonnes per year. Total food waste amounted to 748 tonnes in 2021, including edible waste donated and non-edible waste sent for compost, animal feed or to landfill as a last resort. A.S. Watson aims to take every available step to ensure that no food fit for human consumption should go to waste.

A.S. Watson's priority is to reduce food waste at source. Ways in which A.S. Watson does this includes: better food forecasting by

analysing customer preferences, minimising unnecessary stock movement between stores, implementing detailed food handling guidelines for stores to avoid waste and marking down prices of food approaching "best before" or expiry dates.

Surplus edible food is donated to food banks with the help of appointed A.S. Watson Food Rescue Ambassadors at each of the 150 participating stores around Hong Kong. Food waste classified as non-edible food waste is then transferred to local farms or composting facilities, and as a last priority is sent to landfill.

DONATING FOOD WITH FOOD ANGEL

Since 2012, Food Angel has been an important food donation partner to PARKnSHOP Hong Kong, enabling PARKnSHOP to donate 3,500 tonnes of food and delivering 13 million hot meal boxes and food packs to those in need.

In 2013, PARKnSHOP also launched the City Food Drive Campaign to enable customers to purchase and donate grocery items to Food Angel. Through the generosity of customers, the campaign has collected more than 460,000 food items to help Food Angel.

A.S. Watson employees also volunteer at Food Angel's central kitchen and community centre, giving employees the chance to see first-hand how thoughtful handling of food surplus items can go a long way to creating meaningful impact in the community.



Offering sustainable product choices

Consumers are increasingly looking for products and brands that align with their personal values. A.S. Watson recognises this ever-evolving trend as a high priority in seeking to offer product that is more environmentally and socially sustainable, while also ensuring high levels of safety, transparency and quality.

Understanding customer sentiment

To ensure A.S. Watson is keeping a pulse on how consumer mind-sets are changing, throughout 2021 a series of consumer studies were launched:

- Superdrug issues a quarterly survey to measure brand values and customer connection. The latest survey in 2021 revealed that 47% of respondents consider how ethical a beauty or personal care brand is before buying its products which serves as an important reminder to how the average consumer is

prioritising sustainability and the significance of communicating the business' "Doing Good Feels Super Good" sustainability branding.

- In September 2021, Kruidvat issued a brand and reputation survey to 4,700 customers, non-customers, employees and NGOs. While scoring well on reputation, regarding sustainability, there was some scepticism about how the "price-fighter" image could fit with sustainable products, which are typically seen as more expensive. This survey provided important feedback on how the business needs to communicate more effectively on how more sustainable choices can come at affordable prices.
- Watsons leverages the Nielsen's Brand Equity Tracking Study to understand its perception in the public. In 2021, 60% of customers perceived Watsons as providing sustainable product choices to customers, with Hong Kong, Taiwan, Singapore, Malaysia, Thailand and Philippines being voted as leading in the market for this attribute.

Responding to pro-sustainability customers

To respond to these trends and communicate the positive sustainability impacts of its products, A.S. Watson has developed a number of product lines and platforms that enable customers to shop according to their sustainability values and preferences.

SUSTAINABLE CHOICES

In 2020, Watsons launched Sustainable Choices, a filter and labelling mechanism to allow customers to shop according to four sustainability categories.



CLEAN BEAUTY

Clean Beauty relates to products that are mindfully formulated without the use of certain restricted ingredients, and that also have a positive impact on the environment.

REFILL

Even better than recycling, refillable packaging allows customers to use their packaging again and again.



BETTER INGREDIENTS

This relates to products containing significant components with sustainable raw materials.

BETTER PACKAGING

Better packaging identifies packaging made with paper from responsibly-managed forests or with high levels of recycled content.



To actively track how these categories are performing, a detailed tracking platform has been developed to track sales by business unit, brand type, category and top suppliers so that proactive changes can be made to respond to customer preferences.

In 2021, Watsons announced that it would launch more than 1,600 Sustainable Choices products both in-store and online in close collaboration with brand partners such as Procter & Gamble, L'Oréal, Shiseido, Beiersdorf, GlaxoSmithKline, Johnson & Johnson, Kao, Reckitt and Unilever.

INCLUSIVE PRODUCTS – ADDRESSING UNMET CUSTOMER NEEDS

Superdrug's #ShadesOfBeauty campaign was launched in 2016 as a direct result of a survey commissioned by Superdrug in 2015 focusing on the views from women of colour on high street beauty shopping. The research revealed that two thirds (70%) of black and Asian women did not feel that the high street catered for their beauty needs, and over a third (36%) felt there wasn't enough guidance and advice available in high street beauty stores. To tackle this issue Superdrug launched the #ShadesOfBeauty campaign including a dedicated microsite with over 110 products and 55 new darker toned foundations. Superdrug also held meetings with the UK's largest makeup brands, resulting in Maybelline, L'Oréal and Revlon launching an additional 23 shades in response to this engagement.

In March 2021, Superdrug commissioned a further study surveying 1000 individuals across the country from black and mixed-heritage backgrounds honing in on representation in publicity and marketing. Among many other important insights, the survey found:

- 35% do not currently feel represented when they shop for health and beauty products in high street beauty retailers;
- 86% said that beauty retailers should make their advertising campaigns more inclusive;
- 31% feeling that they are not represented by current beauty brand images on campaigns and posters; and
- 84% agreed that a beauty campaign specifically created for people of colour would be a positive step for a beauty retailer to take.

To do its part in aiming to create systems change, Superdrug committed to 10 short-term pledges:

1. To increase representation across point of sale, website and social imagery, starting with new brand visuals;
2. To elevate the voices of black and mixed-heritage creators and brand founders, through marketing channels, offering up the business' platforms at least once a month;
3. To adopt the Halo Code, ensuring no employee faces barriers of judgements because of their afro-textured hair;
4. To bring new black-founded brands to the high street and expand the range stocked by 10% by end of 2021 (achieved) and another 10% by end of 2022;
5. To offer the largest range of Own Brand kinks, curls & coils products on the high street;
6. To increase the number of stores black-owned brands are available at by the end of 2021 (achieved);
7. To continually develop product that is right for the business' diverse customer base and in 2022 launch the business' most inclusive own brand cosmetics shade range to date;
8. All current pharmacists and nurses to undergo additional skincare training to recognise skincare conditions in people of different skin tones and how to support them by end of 2021 (achieved);
9. To always challenge the business' beauty and healthcare service providers to be more inclusive through the materials they provide; and
10. All current sales advisors to have access to additional training on black & darker-toned skincare, hair & beauty products during 2021 and 2022.



Superdrug's #ShadesOfBeauty campaign was launched to address direct feedback from women of colour on high street beauty shopping

PLANT-BASED AND VEGAN OFFERINGS

According to a 2021 Bloomberg Intelligence [report](#), plant-based foods market could make up to 7.7% of the global protein market by 2030, with a value of over US\$162 billion, up from US\$29.4 billion in 2020.

Responding to this trend, PARKnSHOP has committed to tripling its plant-based meat and dairy options responding to the significant uptick in demand from those following vegan, vegetarian and flexitarian diets. PARKnSHOP has also acted as springboard for plant-based innovations identified by the Group's association with the Li Ka Shing Foundation, such as Impossible Products and Perfect Day ice cream.

Vegan beauty is also a trend that is here to stay. The global market for vegan cosmetics is estimated at US\$15.1 billion in 2020 and expected to increase to US\$21.4 billion by 2027, according to a [report](#) released by ReportLinker. In 2017, Superdrug launched B. Cosmetics, a vegan range of beauty and skincare products. At the time of launch, when vegan products were relatively niche, Superdrug was market-leading in offering a vegan range, at high street prices. This approach has changed since then where it now makes as many products as possible (now at 1,600 products) suitable for vegans.



SUSTAINABILITY AT AFFORDABLE PRICES

To help customers in making conscious and sustainable choices, Kruidvat launched the concept "Natuurlijk & Voordelig" ("Natural and Affordable") in 2020.

Often sustainable products come at a premium price, excluding many that cannot afford them. "Natuurlijk & Voordelig" promotes brands with positive sustainability impacts in the areas of sustainable sourced ingredients, sustainable packaging and sustainable manufacturing processes at accessible prices.

Sustainable raw materials

A.S. Watson is progressively taking steps to improve the environmental and social impacts of key raw materials.

Wood pulp can be found in a number of A.S. Watson Own Brand products such as tissues, toilet rolls, sanitary products, nappies and wet wipes, as well as across packaging. A.S. Watson targets that by 2030, all of Own Brand paper products are made with pulp and paper from sustainable sources. Watsons Health & Beauty Retail has already reached this goal, PARKnSHOP, Superdrug and Kruidvat aim to reach it by 2025. Across the A.S. Watson, progress stands at 68%.

In 2020, A.S. Watson also became a member of the Roundtable on Sustainable Palm Oil ("RSPO"), a leading organisation promoting social and environmental compliance in the palm oil industry. Sustainable palm oil has been introduced in various Own Brand products such as Kruidvat and Superdrug Brands. As part of its strategy, A.S. Watson is expanding the selection of Own Brand products to be produced with RSPO-certified palm oil, offering more sustainable choices to customers.

While food retail only makes up a relatively small fraction of total procurement spend versus health and beauty, PARKnSHOP also commits to only sourcing deforestation-free meat and in 2021, A.S. Watson's food retail division was also ranked number one in terms of its procurement of sustainable seafood by [WWF in a review of retailers in Hong Kong](#).

Watsons Malaysia refill station





PARKnSHOP vegetarian counter

Product and service safety, transparency and quality

With customers' best interests central to everything that A.S. Watson does, the division has been working with leading experts and researchers globally to deliver the highest levels of product and service safety, transparency and quality through its wide range of Own Brand products. A.S. Watson pays meticulous attention to every stage of the production-to-shelf process and proactively seeks customer feedback to ensure ongoing updates to service quality.

Before suppliers are permitted to manufacture A.S. Watson Own Brand products, they must first be assessed by external auditing agencies and/or by A.S. Watson itself. When developing a new product, there is a rigorous and intensive internal testing process and external assessment. All items, from raw materials to the final product, are assessed by a European toxicologist to ensure it complies with regulatory requirements in each market. A.S. Watson conducts regular assessments of Own Brand products led by external independent laboratories and internal ISO17025 accredited laboratories (food and non-food) to ensure the products sold to customers are up to standard.

A.S. Watson conducts around 250 tests per week in external accredited laboratories and in-house laboratory on new products, product deliveries, products associated with customer complaints and samples from the Mystery Shopper programme. For food retail, an additional 1,400 pesticide residue rapid (ELISA based) tests are conducted every week on incoming vegetables as part of the Farm Check programme where A.S. Watson has an established network of Quality Assurance ("QA") approved vegetable farms. A.S. Watson also has Farm Check systems in place within supplying farms in Mainland China for chilled pork, chilled chicken, chicken eggs and plans to expand the process to farmed fish will continue once COVID restrictions are lifted. The division's QA agricultural scientists include both arable/horticultural and veterinary specialists.

A.S. Watson has well-established and tested systems that enable it to remove any concerned product from sale in all stores within three hours including, where appropriate, a barcode blocking system that prevents any concerned item being scanned and sold.

Further, key members of each business unit's management teams take part in regular crisis management workshops to ensure they are thoroughly prepared for any emergency. Each business unit has a detailed crisis manual detailing action procedures and management responsibilities including internal and external actions and communications.



Chemicals management

The division has stringent requirements for chemicals used in A.S. Watson Own Brand products, as well as quality and safety guidelines going beyond existing regulations in each market. Since 2009, A.S. Watson has also implemented a restricted ingredients list for personal care and cosmetics, to further restrict or ban ingredients considered harmful by independent safety experts. This list is reassessed twice per year and is communicated to Own Brand suppliers for immediate implementation in the new product development phase.

In Europe, A.S. Watson also monitors the compliance of ingredients to the Registration, Evaluation, Authorisation and Restriction of Chemicals ("REACH") regulation and since 2008 the division has co-registered 13 substances with support from appointed third party representative agency, Ecomundo.

Traceability

A.S. Watson has invested in traceability software, including Coptis Lab software, to keep records of all ingredients used in A.S. Watson Own Brand formulated products, and be able to fast track any ingredient back to products and suppliers.

For wood pulp commodities, A.S. Watson is using the amfori BEPI Timber Due Diligence Programme to ensure compliance with the European Union Timber Regulation and maintain an effective due diligence system.

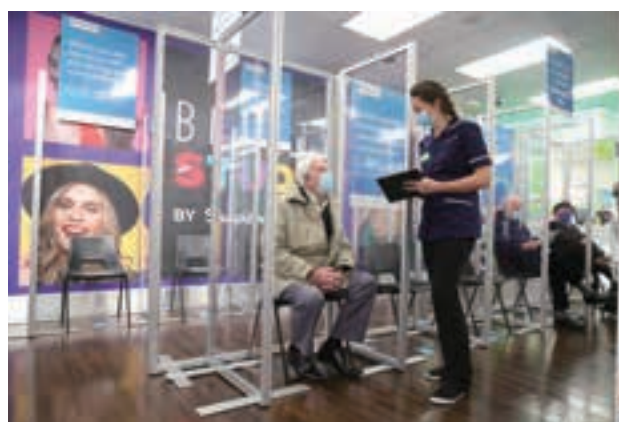
For Own Brand products, A.S. Watson is using two online technical file management tools to keep records of all technical files and traceability of products for up to 10 years in the tools, before being archived.

Accessible and affordable healthcare

At A.S. Watson, being a retailer is more than about providing top-quality products and world-class services. It is also about building a strong relationship with customers – connecting with and truly understanding them in order to be in tune with their changing needs.

From easymed pouching to aid medicine compliance, to a range of online doctor services, Superdrug is always evolving ways to support customer health and give them convenient alternatives to visiting their local doctors.

The launch of an un-branded Emergency Hormonal Contraceptive pill ("EHC") at half the price of other branded EHC also highlights Superdrug's commitment to accessible medicine for all and influenced how EHCs are now being priced elsewhere across the UK. It was also the first on the high street to offer HIV test kits and to offer a breast checking consultation service in-stores. Superdrug further played an important role during the pandemic with the launch of COVID-19 antibody tests, with the aid of its phlebotomy trained nurses, as well as with its participation in the rollout of the biggest vaccination programme in NHS history by opening seven COVID vaccination sites in its pharmacies.



Superdrug supports the UK's mass COVID-19 vaccination programme

Data privacy and cyber security

With millions of customers around the world, A.S. Watson has a serious role to play protecting their data. The Retail division's approach is first and foremost guided by the Group-level privacy and security policies as well as the Group's Cyber Security Working Group as discussed on pages 32 and 35 in this report.

A.S. Watson regularly updates its Privacy Policy to be transparent about why it collects information, how it uses that information, and the choices customers have about how it gets used. The Privacy Policy and Intra-Group Data Transfer Agreement set out clear terms involving the collection, use, sharing and retention of user data including data transferred to third parties. Parties are notified in case of any policy changes or data breaches as per the Privacy Policy and notification procedures outlined in the Personal Data Crisis Management Guidelines. Data privacy training is provided to all new joiners and existing staff annually and every second year through e-learning modules. Outsourced call centre and IT security team members are also provided with training.

Regarding cyber security, A.S. Watson uses the Information Security Forum ("ISF") Standard of Good Practices for Information Security as its information security management Framework, which is also aligned to ISO 27001. A.S. Watson conducts internal security audits, ISF self-assessments, vulnerability assessments and penetration testing in-place. The division has an annual cyber security training campaign for all A.S. Watson employees with metrics to measure the effectiveness of the campaign. In addition, A.S. Watson also runs phishing email simulations and provides formal channels for the reporting of malicious emails.

Ensuring a responsible supply chain

Customers of today have high expectations of the products they buy, expecting not only high quality at affordable prices, but also for products to be sustainably-sourced. To meet these expectations and A.S. Watson's own internal drive to be a responsible organisation, A.S. Watson's Supply Chain team sources with sustainability in mind through rigorous practices to ensure supply chain accountability.

Responsible sourcing approach

A.S. Watson is committed to working closely with suppliers to ensure they respect human rights, promote decent working conditions and implement environmentally sustainable practices.

In 2021, A.S. Watson enhanced its "Know Your Supplier" due diligence assessment process to widen the assessment on compliance processes, operational and ethical business practices, adverse publicity and prior regulatory offences or misconduct. A.S. Watson also assesses supplier practices in relation to environmental impact, waste reduction and packaging, and labour standards.

In 2021, a new Supplier Code of Conduct was rolled out for A.S. Watson suppliers including consistent expectations for minimum

standards of ethical, social and environmental practices. Lack of support or violations of the Code will result in consequences as severe as terminating the trading relationship or suspending such operations until compliance is achieved.

A cornerstone programme of A.S. Watson's supplier engagement assessment programme is its membership to amfori's Business Social Compliance Initiative ("BSCI"), an organisation dedicated to improving working conditions and environmental management in global supply chains. An important feature of this membership is that it allows members with common suppliers to share audit results thereby avoiding duplication in effort and cost.

A.S. Watson has adopted amfori BSCI's Code of Conduct which refers to international conventions such as the Universal Declaration of Human Rights, the Children's Rights and Business Principles, the UN Guiding Principles for Business and Human Rights, the Organisation for Economic Co-operation and Development Guidelines, the UN Global Compact and the International Labour Organization Conventions and Recommendations. All suppliers must endorse the amfori BSCI Code of Conduct as part of the supplier contracting process.

A.S. Watson requires all Own Brand suppliers located in identified high-risk countries identified by amfori BSCI to be audited against amfori BSCI's requirements. It also accepts audit results from a small number of other leading practice audit frameworks such as Sedex Members Ethical Trade Audits and the Initiative for Compliance and Sustainability.

Specifically relating to engaging suppliers in environmental protection, A.S. Watson takes part in amfori BSCI's Business Environmental Protection Initiative to drive environmental improvements in its supply chain. Suppliers identified as high-risk must complete a self-assessment covering 11 environmental performance areas. Following the assessment, suppliers are informed of their assessed risks and notified of the appropriate training to attend, delivered either by amfori BSCI or by other appointed training companies. Their progress is further monitored for progress tracking.

By 2030, A.S. Watson aims to ensure that 100% of Own Brand purchase value from high-risk countries (identified by amfori BSCI) will be assessed for:

- Social compliance through amfori's BSCI audits (or others endorsed by A.S. Watson); and
- Environmental compliance through amfori BSCI's Business Environmental Protection ("BEPI") (or others endorsed by A.S. Watson)

During 2021, 584 factories were audited under A.S. Watson's sustainable supply chain programme with the following scores:

Table 23: 2021 sustainable supply chain programme audit results

Types	Scores	No. of factories		
		2019	2020	2021
BSCI audits	A	5	3	15
	B	8	14	30
	C	298	319	490
	D	31	21	27
	E	6	3	0
	ZT	0	0	0
Other accepted social audits		69	81	22
Total		417	441	584

Key:

- A, B Very good practices exhibiting continuous improvement. Audit valid for two years' maximum.
- C Acceptable level of performance. A remediation plan must be provided within two months of the audit date and a follow-up audit within 12 months of the audit date.
- D, E Poor levels of performance. A remediation plan must be provided within two months of the audit date and a follow-up audit within six months of the audit date.
- ZT Human rights violations and business behaviour that may endanger the independence of the audit may qualify as possible zero tolerance (ZT) cases. Examples include child labour, bonded labour, and unethical behaviour. Upon discovery of ZT issues, the auditor would inform first amfori BSCI, which will coordinate an expedited remediation plan and require immediate improvements.

A.S. Watson's approach with factories identified with non-compliances is not to terminate the business relationship as soon as the findings are available but rather help solve the problems identified. Following the amfori BSCI System manual, A.S. Watson would request the factories to prepare and submit a remediation plan and be re-audited within 2-12 months of the last audit depending on their audit score. Based on the factory competency, additional training is offered face-to-face or online through external independent third parties.

Termination of business would occur only if a factory has not shown any improvements through independent re-audit or if its management refuses to cooperate.

Modern slavery

According to the International Labour Organisation, over 40 million people are in modern slavery today with an estimated 16 million people exploited within the private sector. With supply chains becoming more global and complex, modern slavery can be hidden from plain sight by unscrupulous employers and therefore may be unwittingly part of many products on shelves today.

A.S. Watson has therefore been proactively taking steps to develop and deepen its understanding of the risk of modern slavery to prevent exploitation from taking place within its global supply chains.

Since 2016, A.S. Watson has been a member of The Mekong Club ("TMC"), an organisation that helps its member companies to prevent modern slavery within business operations. A.S. Watson was the first business to sign up to TMC's Business Pledge against Modern Slavery and with TMC's help, A.S. Watson developed and rolled out a toolkit for all supply chain teams to understand the risks and how to identify flags for potential modern slavery. Key departments involved in supplier contract negotiations and quality assurance auditing have been trained with TMC online toolkit. Employee workshops have also been carried out in Mainland China, Hong Kong, Singapore, the UK and France. In the UK, The Perfume Shop, Savers and Superdrug have also published statements on modern slavery and human trafficking as required by the UK Modern Slavery Act.

Investing in developing thriving and resilient communities

Meaningful and impactful community engagement is important to A.S. Watson not only because it's the right thing to do, but also because thriving, vibrant communities are inherently interlinked with A.S. Watson's success.

Healthy body, thriving community

A central theme for A.S. Watson's community engagement programme has been to support the physical and mental wellbeing of the communities in which it operates, which have been particularly impacted during the pandemic.

Watsons VR Get Active Park

A new [global study carried out by Ipsos](#) across 30 countries, looking at the impact of COVID-19 on dietary related health choices, has found that while many are aware of the possible link between obesity and the severity of COVID symptoms, people around the world are gaining weight and exercising less as a result of the pandemic.

Motivated by these statistics, Watsons launched VR Get Active Park in markets including Hong Kong, Taiwan, Thailand and Malaysia to help customers stay active and healthy while at home. The 360° Watsons VR Get Active Park brings together customers in a virtual play land that is made up of different sections including a games zone, exercise arena, virtual Watsons store and rewards station, offering customers a virtual immersive experience to live an active lifestyle.



Watsons VR Get Active Park helps customers stay active and healthy while at home

Aside from the different sections available in the park, Watsons added a localised twist to each region's park. In Malaysia, customers were given the opportunity to learn about healthy cooking from Malaysia's Masterchef, Abang Brian. In Thailand, customers were invited to become its "sweat challengers" and take on Watsons trainers to complete training tasks while Watsons pharmacists were invited to share tips on staying healthy.

Inspiring sports athletes

The annual A.S. Watson Group [Hong Kong Student Sports Awards](#) encourages student athletes to pursue their sporting aspirations. Hong Kong's top cyclist Sarah Lee, two-time Olympic Bronze medalist, was invited to meet and interact with award winners in the first physical event after the COVID-19 outbreak in 2020.

In 2021, the Watsons Athletic Club organised the first large-scale athletics competition in Hong Kong since the pandemic began, giving over 2,800 young athletes across 33 events the chance to re-ignite their passion for training and competing. The event even resulted in three new Hong Kong athletic records in the under 20s discus throw, under 18s 400m hurdles and under 18s triple jump.



A.S. Watson Group Hong Kong Student Sports Awards invites Sarah Lee to interact with award winners and inspire future sports stars

The Smile Community

A.S. Watson believes a simple smile can have a big impact on mental wellness so it launched the Smile Community campaign to celebrate its 180th anniversary to bring positivity to its customers and communities. The campaign has achieved its target to reach 1.8 million index by 20 March 2021, to coincide with the United Nations' International Day of Happiness as evidenced by photos uploaded on social media and tracked through artificial intelligence.

Community investment and engagement

Globally, the A.S. Watson brands contribute in different ways to make their communities better places. In 2021, A.S. Watson brands raised donations amounted to HK\$43.9 million, including customer and supplier contributions, to support community projects. Employee volunteering is also an area A.S. Watson is passionate about. Through the Smile for Good 2021 programme, which called upon every business unit to support corporate volunteering, over 8,600 volunteers have contributed 60,800 hours to serve over 223,800 of those in need in the communities in which it operates. In celebrating the Group's 180th anniversary, "180 Challenge" was launched to celebrate the important milestone. Partnering with Hong Kong Young Women's Christian Association, A.S. Watson Group celebrated its 180th anniversary with a series of volunteer activities to explore the history of Hong Kong and understand A.S. Watson's culture of caring. The programme was recognised by

the Labour and Welfare Bureau of HKSAR Government with the Outstanding Social Capital Partnership Award (Corporate) winner of the Community Investment and Inclusion Fund award scheme.

The division also played an important part in supporting the community during the pandemic through essential services provided:

- Superdrug was one of the high-street retailers to take part in the COVID-19 vaccination programme, increasing accessibility to the local community during this global vaccination effort and administering over 210,000 COVID-19 vaccinations to date. 280 retail colleagues from Healthcare teams were cross-trained to support patients and 240 new team members joined Superdrug to enable this effort. All Superdrug stores in healthcare services stayed open during the lockdown period in the UK to support customers and the community.
- Watsons Philippines launched the "Resbakuna sa Botika" COVID-19 booster vaccination programme, offering customers conveniently-located vaccinations in designated Watsons stores.
- A.S. Watson donated over seven million surgical masks and HK\$9.4 million worth of hygienic products to the underprivileged globally.
- A.S. Watson Industries converted one of its bottling plants into a sterile mask manufacturing plant producing 94.5 million Own Brand face masks in 2021.



A.S. Watson Group organises volunteer activities to elderly and helps to preserve local culture



EDL operations staff

INFRASTRUCTURE

SERVING SOCIETY

The Infrastructure division aims to create a better future, today through its diversified investments in energy infrastructure, transportation infrastructure, water infrastructure, waste management, waste-to-energy, household infrastructure and infrastructure-related businesses.

Globally these businesses provide essential services and they are engaging and supporting stakeholders in meaningful ways to deliver outcomes that really matter. They are leading their industries in many low-carbon innovations and collaborating with governments, partners and customers to achieve their net-zero ambitions.

In delivering on this, the Infrastructure division therefore aims to –
Accelerate the transition to a sustainable future.











Solar installation by Victoria Power Networks



Material topics, goals and progress

The following table highlights the material topics identified for the Infrastructure division, as well as the relevant UN Sustainable Development Goals ("SDG"), division goals and progress made.

Material topics & SDGs	Goals	Highlights
Enabling the net-zero transition   	<ul style="list-style-type: none"> Be a partner of choice in helping customers and countries deliver on their net-zero goals. 	<ul style="list-style-type: none"> At the forefront of leading innovation and technologies that are crucial to enabling net-zero economies including leadership in hydrogen, solar, wind, waste-to-energy, carbon capture, use and storage, circular economy approaches and smart city solutions.
Taking action on climate change   	<ul style="list-style-type: none"> Set long-term targets to reduce carbon emissions and invest in the most impactful net-zero transition opportunities identified including: renewable and other clean energy generation; phasing out coal from all operations; energy efficiency; sustainable transportation; circular economy approaches; and climate risk and resilience management. 	<ul style="list-style-type: none"> Ambitious targets set by nine businesses to help governments deliver on their net-zero goals. New commitment to phase out coal-fired power generation from global operations by 2035. 12.9% reduction in scope 1 and 2 emissions in 2021 versus 2020 and 21.8% versus 2018. 6,405GWh of renewable and other clean energy generated in 2021. Long-term ambition to replace natural gas with 100% renewable gas (hydrogen or biomethane) for home heating across gas networks. Over 14GW of distributed energy resources connected to grids by the Group's electricity distribution networks. World-leading technologies and approaches in flexible exports implemented to cater for renewable energy connections. Flood mapping tools developed and millions invested in flood defences. Extensive bushfire mitigation programmes and investment across Australian businesses.
Protecting biodiversity 	<ul style="list-style-type: none"> Introduce a biodiversity net gain philosophy into the operational ethos of businesses. 	<ul style="list-style-type: none"> Northern Gas Networks committed to measure and report the natural capital value of up to 50 of its largest sites by 2026. Northumbrian Water completed its first natural capital account and is developing a tool to evaluate the biodiversity value of all sites larger than 0.2 ha. UK Power Networks has identified 100 sites for action plans to enhance the biodiversity potential. Wales & West Utilities has a long-term ambition to achieve biodiversity net gain by 2039, with an interim goal of achieving no net loss on designated products between 2021 and 2026.

Material topics & SDGs	Goals	Highlights
Creating a great place to work     	<ul style="list-style-type: none"> • Create a zero harm workplace and culture. • Support employee health and wellbeing. • Attract, develop and retain high-performing talent. • Create quality and rewarding training programmes. • Promote and create inclusive and diverse teams. 	<ul style="list-style-type: none"> • Culture of zero harm promoted across businesses and tone set from the top by: i) including safety KPIs in the compensation schemes of all its businesses CEOs and executive management; ii) making health and safety a focus of all its board meetings around the world; and iii) holding an annual health and safety conference including representatives from each of the Infrastructure businesses. • Extensive employee health, safety and wellbeing support in response to the pandemic. • Emphasis on high impact apprenticeship programmes and maintaining talent. • Multiple recognitions as top businesses to work for.
A steadfast commitment to customers and communities  	<ul style="list-style-type: none"> • Go above and beyond to engage customers and exceed their expectations. • Support vulnerable customers and turn the tide on fuel poverty. 	<ul style="list-style-type: none"> • Fuel poverty programmes in place across the distribution networks in the UK and Australia.
Ensuring responsible business practices (a focus on cyber security)  	<ul style="list-style-type: none"> • Implement leading practice approaches to cyber security. 	<ul style="list-style-type: none"> • Cyber security policies, governance mechanisms and cyber-attack security plans in place to protect corporate information assets and critical infrastructure.
	<p>SDG 17, "Partnerships for the goals", underpins action on all material topics and enables the best possible impacts through collaboration and working with relevant partners.</p>	

Enabling the net-zero transition

The Infrastructure division is positioned at the forefront of leading innovation and technologies that are crucial to enabling net-zero economies. Providing 23 million customers with essential services globally in gas, water and electricity services, the following businesses are spotlighted in this section to show the pivotal enabling roles they are playing, while also working to deliver the lowest cost pathways to decarbonisation for a just and fair transition.

Table 24: Business enabling role and supporting local contexts

Business	Role in the net-zero transition	Local context
United Kingdom		
Northern Gas Networks Gas distribution network Customers: 2.7 million	With natural gas use in the UK accounting for one third of the country's carbon footprint, finding solutions to decarbonise the gas grid is essential to achieving net-zero.	
Wales & West Utilities Gas distribution network Customers: 2.5 million	Northern Gas Networks and Wales & West Utilities are delivering real-world trials to prove how the existing gas networks in the UK can be converted safely and affordably to 100% hydrogen to support the decarbonisation of heat, transport and industry.	<ul style="list-style-type: none"> • The UK has committed to net-zero by 2050. • The Prime Minister's Ten Point Plan sets out the pathway for a green industrial revolution. • The UK Hydrogen Strategy plans to unlock GBP4 billion of investment and generate 5GW of hydrogen by 2030, which has since doubled to 10GW in Britain's Energy Security Strategy. • The Energy White Paper 2020 envisages the installation of 600,000 heat pumps a year by 2028, alongside trials to provide evidence on the role of hydrogen in domestic heat. • The UK has banned the sale of new combustion engine cars by 2030. • The Net Zero 2030 Routemap sets out how water companies will play their part in reaching net-zero two decades ahead of the UK's 2050 target. • The Department for Transport's net-zero emissions target is supported by Network Rail's Traction Decarbonisation Network Strategy, aiming to displace diesel-only trains by electrification, battery and hydrogen train deployment by 2040.
UK Power Networks Electricity distribution network Customers: 8.4 million	As a major electricity network operator in the UK, UK Power Networks is at the heart of enabling the net-zero transition through its crucial role both in connecting renewable energy and facilitating the uptake of new low-carbon technology; it has therefore put net-zero at the heart of its latest Business Plan 2023 – 2028. UK Power Networks became the first distribution network operator in the UK to have its scope 1, 2 and 3 targets validated by the Science Based Targets initiative at a Well Below 2 Degree target. As a Business Ambition for 1.5 °C campaign member UK Power Networks will upgrade its targets in the near future to be aligned to a 1.5 °C pathway.	
Northumbrian Water Water and sewage services Customers: 4.5 million	The UK's water companies together produce almost a third of UK industrial and waste process GHG emissions. Northumbrian Water will achieve a net-zero carbon position by 2027 making it the first water company in England to meet this ambition. It was also approved by the United Nations to become part of the Race to Zero campaign.	
UK Rails Owner of passenger and freight rolling stock	With over 75% of its rolling stock already electric, as well as new innovations being developed in hydrogen and battery technologies to increase the potential for zero-emission trains, UK Rails is well-positioned to be a partner of choice to support the UK transport industry's net-zero journey.	

Business	Role in the net-zero transition	Local context
Australia		
Australia Gas Infrastructure Group Gas distribution network Customers: 2 million	Australian Gas Infrastructure Group is already bringing its vision of converting its entire network to renewable gas by 2040-2050 into reality by being the first gas network in Australia to deliver a green hydrogen blend to customers on an existing gas network.	<ul style="list-style-type: none">Australia has committed to net-zero by 2050.The National Hydrogen Strategy aims to invest AU\$1.4 billion in building a hydrogen industry.The South Australian Government is targeting 100% renewable electricity by 2030.The Victorian Government targets 50% renewable electricity by 2030.
EDL Owner and operator of a global portfolio of power stations	EDL is a leading global producer of sustainable distributed energy that helped its customers to abate four million tonnes of GHG emissions in 2021 by producing electricity and renewable natural gas across a large portfolio of landfill gas and waste coal mine gas sites globally.	
SA Power Networks Electricity distribution network Customers: 0.9 million	As major electricity distribution networks for the Australian states of South Australia and Victoria, these networks are critical to enabling the transition to renewable electricity. Already, SA Power Networks has the highest penetration of distributed solar of any gigawatt-scale energy system in the world and it's working on doubling its solar capacity in the next five years.	
Victoria Power Networks Electricity distribution (owner of Powercor and CitiPower) network Customers: 1.2 million		
United Energy Electricity distribution network Customers: 0.7 million		
Centre Continental Europe		
AVR Specialist in treatment of residual waste.	AVR achieves the maximum recovery of energy, raw materials and other materials from residual, unrecyclable waste through smart incineration. Waste is then turned into valuable steam, heat and electricity for supply to its surrounding communities. During 2021, 2,266,000 tonnes of unrecyclable waste was turned into valuable products and services that enabled 926,700 tonnes of avoided CO ₂ emissions.	<ul style="list-style-type: none">The EU has committed to net-zero by 2050.The EU ETS covers 40% of EU GHG emissions, including partial waste-to-energy.Close to 225 million smart meters for electricity and 51 million for gas will be rolled out in the EU by 2024, representing a potential investment of EUR47 billion.The EU has set a renewable energy of at least 32% renewable energy mix by 2030.
ista Products and services in energy efficiency, notably sub-metering.	ista's data-based products and services make individual energy consumption transparent to customers so they can save energy, costs and CO ₂ . ista's core product, data-based heat cost allocation, helps residents of multi-family buildings to save on average 20% of their annual heat consumption and costs. Every year some 3.7 million tonnes of CO ₂ emissions are avoided by our customers in Germany alone.	
Hong Kong		
HK Electric Electricity generation and distribution. Customers: 0.6 million	HK Electric is one of two main electricity generation companies in Hong Kong, which combined account for roughly two thirds of the city's GHG emissions, therefore making their actions critical in achieving the targets stipulated in Hong Kong's Climate Action Plan 2050.	<ul style="list-style-type: none">Hong Kong has committed to achieve carbon neutrality before 2050.As per the Hong Kong's Climate Action Plan 2050, the Hong Kong government aims to phase out coal use for daily electricity generation and increase renewable energy in its electricity generation mix by 7.5 – 10% by 2035.

BRINGING HYDROGEN FROM CONCEPT TO REALITY

With natural gas use in the UK accounting for one third of the UK's total carbon footprint, finding viable and affordable solutions to decarbonise the gas grid is essential to achieving net-zero. Northern Gas Networks has been at the forefront of this movement, by delivering ground-breaking research in hydrogen and supporting the development of integrated energy networks that dissolve the traditional barriers between gas, electricity and energy storage.

Launched in 2014, and led by Northern Gas Networks, in partnership with Wales & West Utilities, the H21 project set out to explore the potential of converting the existing gas networks in the UK to 100% hydrogen. The project began as a desktop exercise, and over the years has progressed to a number of follow-on projects, including real-world trials. The range of partners has expanded to include utilities across the UK, academia and private enterprise.

The publication of the UK Government's Hydrogen Strategy in August 2021 shows just how far this nascent industry has come from desktop thinking to reality. The strategy sets out a vision of a thriving, low-carbon hydrogen sector, supporting over 9,000 UK jobs, unlocking GBP4 billion of investment and generating 5GW of hydrogen by 2030 – enough to heat 3 million UK homes each year. More recently, the UK government's British Energy Security Strategy has doubled the target for low-carbon hydrogen production to 10GW by 2030.

Northern Gas Networks' work in hydrogen is now focused on delivering real-world trials to prove that the UK's existing gas networks can be converted safely and affordably to run on hydrogen. With its partners, Northern Gas Networks has launched the world's first 100% hydrogen testing facility in Buxton, and

during 2020 and 2021, in the village of Winlaton in the North East of England, it began testing blended hydrogen with more than 660 homes to study how hydrogen performs for everyday heating and cooking. The 10-month pilot, part of a wider project called HyDeploy, has seen a 20% blend of hydrogen added to the local gas supply. Under these conditions, local customers do not need to change their appliances or alter their behaviour in any way. The use of blended hydrogen is considered a crucial first step on the path to 100% hydrogen. In fact, if a 20% hydrogen blend was added to natural gas across the UK, it could save around six million tonnes of CO₂ each year, the equivalent of taking two and a half million cars off the road.

To help the public and key industry partners such as boiler manufacturers to become familiar with hydrogen, Northern Gas Networks has built a hydrogen show home at its InTEGREL (Integrated Transport Gas Electric Research Laboratory) site in the North East of England. The show home is fully equipped with hydrogen appliances for visitors to see them working in everyday life. It also enables appliance manufacturers to test products in a real-world setting. The Hydrogen Home is part of a larger Customer Energy Village, which will see the construction of nine houses built to standards from 1910 to the present day. Each home will include monitoring equipment, allowing Northern Gas Networks to test use of services, building performance and technology and help address the technical barriers to achieving net-zero in older properties. Meanwhile at Northern Gas Networks' Spadeadam hydrogen test site, together with its partner DNV, Northern Gas Networks has constructed a mini gas distribution network which is being used to test whether existing gas procedures can be undertaken on hydrogen as they are currently with natural gas.



Northern Gas Networks unveils hydrogen show home

Northern Gas Networks' work in hydrogen is now focused on delivering real-world trials

PIONEERING IN BLENDING GREEN HYDROGEN



Australian Gas Infrastructure Group is committed to delivering for its customers today and tomorrow. Renewable gas will help Australian Gas Infrastructure Group's customers, and Australia, achieve sustainability goals, whilst retaining the most prominent value proposition that gas networks have historically provided – reliable and affordable energy.

Australian Gas Infrastructure Group is targeting 10% renewable gas across its distribution networks by 2030, and conversion to 100% renewable gas by 2040 as a stretch target and by no later than 2050. Renewable gas includes gas from zero-emissions and carbon-neutral sources such as green hydrogen and biomethane.

Australian Gas Infrastructure Group is already bringing this vision into reality by being the first gas network operator in Australia to deliver a green hydrogen blend to customers on the existing gas network. It has led the industry by proving the safety case to the South Australian government and laying the foundations for hydrogen blending in Australian gas networks.

Using a 1.25 MW electrolyser powered by renewable electricity, Hydrogen Park South Australia ("HyP SA") is Australian Gas Infrastructure Group's and Australia's first project that produces green hydrogen for blending with natural gas at volumes of up to 5% and supply to nearby homes via the existing gas network. Australian Gas Infrastructure Group is also developing Hydrogen Park Gladstone with the aim to distribute a blend of up to 10% renewable gas to more than 770 homes and businesses throughout an entire city's existing gas network, which will be another Australian-first.

Building on this experience, Hydrogen Park Murray Valley, a renewable hydrogen project that Australian Gas Infrastructure Group is developing with a joint venture partner, will become Australia's largest renewable hydrogen production facility. Pending final approvals, the project aims to deliver up to a 10% renewable gas blend to approximately 40,000 residential and commercial gas connections and 20 industrial customers in the cities of Albury and Wodonga.

Australian Gas Infrastructure Group is targeting 10% renewable gas across its distribution networks by 2030

PUTTING NET-ZERO AT THE HEART OF UK POWER NETWORKS' BUSINESS PLAN

This is a pivotal time for the energy industry with large-scale shifts occurring in technology, society and energy to achieve a zero-carbon future. Indeed the volume of carbon emitted in producing electricity in Britain has fallen by 40% in just six years. UK Power Networks is playing a pivotal role in this transition through both connecting unprecedented volumes of low-carbon generation at a rapid pace, while enabling other sectors, such as transport and domestic heating, to decarbonise through electrification. Since 2010, UK Power Networks has connected nearly 5GW of distributed generation to its network and is helping to increase the connections available to the 180,000 electric vehicles on the roads across its three networks, a number set to increase to between 1.6 and 2.7 million vehicles by 2028.

In December 2021, UK Power Networks published its Final Business Plan for the RIIO-ED2 period (2023-2028) that puts facilitating the transition to net-zero at the heart of its strategy. Among the business' seven "Keys to Success", UK Power Networks commits to:

- Facilitating decarbonisation at the lowest cost; and
- Delivering the lowest possible bills whilst enabling net-zero.

To enable this future, UK Power Networks' role is changing fundamentally. Alongside the traditional role of being a Distribution Network Operator with the continued and fundamental role of keeping the lights on, UK Power Networks is establishing an independent and legally separate Distribution System Operator business unit to realise its vision of a dynamic distribution system, with electricity demand and supply flexing in response to distribution-level conditions and market signals. UK Power Networks expects to see market-based solutions which influence consumer behaviours, supplemented with traditional network investment that results in the lowest costs for consumers. This will lead to a smarter and more highly utilised distribution network, with faster and cheaper access for the low-carbon technologies needed to achieve net-zero. This evolution is requiring a radical departure from traditional thinking that has guided networks for the last 100 years; it has emboldened UK Power Networks to become a disrupter, thinking in new ways, being more dynamic and agile in line with changing market conditions and customer behaviour, and working in much stronger collaboration with others.

UK Power Networks is connecting unprecedented volumes of low-carbon generation at a rapid pace



DRIVING INNOVATION IN RAIL TRANSPORT

Although railway only accounts for [1.4%](#) of the total domestic transport GHG emissions, it presents an immense opportunity to facilitate a modal shift and support the UK's net-zero ambitions. Even though the objective is clear, the pathway to net-zero for the industry is complex and will require multi-pronged approaches. UK Rails is therefore future-proofing its portfolio by exploring a range of innovations that can enable different pathways along the journey to net-zero.

Decarbonising existing assets

With over 75% of its rolling stock being electric and a portfolio of innovative technologies being explored, UK Rails is already well-positioned to deliver the UK transport industry's decarbonisation journey.

UK Rails is exploring impactful battery technology both as a supplementary power source for diesel trains and for extending the range of electric trains to be able to operate them where part of a route isn't electrified. With plans to develop the Class 802 inter-city battery hybrid train with Hitachi underway, fuel usage and carbon emissions are expected to be reduced by at least 20% with the introduction of the battery technology. By using battery power to travel in and out of stations and urban areas, the train will further improve air quality and dramatically reduce noise levels. UK Rails is also working with UK Power Networks Services to help the rail industry develop early operational experience of battery trains and charging facilities.



Promoting a circular economy is also of focus. UK Rails' new SWIFT Express Freight product offers a cost-effective and low-carbon solution for freight operators. With end-of-life passenger trains repurposed as freight carriers by removing passenger features, and installing new flooring and equipment to store freight parcels, the asset can have an extended use. This is currently receiving interest from an ever-increasing number of freight operators that are seeking to provide solutions to the shortage of HGV drivers in the supply chain.

Enabling the modal shift with enhanced connectivity

At 40% lighter weight than trains of similar capacity, Revolution Very Light Rail – developed jointly by UK Rails and a consortium of organisations – can help boost connectivity and mobility in remote and rural areas with a lightweight, energy-efficient vehicle that is straightforward to operate and geared to the needs of communities. The Demonstrator was launched in September 2021 and is equipped with hybrid diesel-electric powertrain, enabling a low emission rail transport system.

Taking a leading role in hydrogen trains

In an industry-first partnership, UK Rails has signed a Memorandum of Understanding with Alstom, Britain's leading train manufacturer and maintenance provider. Through this, UK Rails will explore the technical and commercial feasibility to build the UK's first-ever, brand-new hydrogen fleet. In 2021, UK Rails also entered into an agreement with H2 Green, a hydrogen network operator, with a view to develop low-cost and reliable green hydrogen supply solutions for the UK railway. This partnership will help determine the production and refuelling infrastructure required to support wide-scale deployment of hydrogen-powered rolling stock fleets.

UK Rails is exploring building the UK's first-ever, brand-new hydrogen fleet

FACILITATING THE RAPID UPTAKE IN RENEWABLES IN SOUTH AUSTRALIA



SA Power Network's newest depot, Angaston, has installed a 94kW solar system on site

Over the past decade, the South Australian electricity system has undergone a dramatic transition from being predominantly coal and gas powered to being powered largely by renewable energy. Indeed, South Australia set an impressive new renewable energy record in the final days of 2021, with the state's solar and wind farms supplying an average of just over 100% of local demand every day for a period of almost one week. Not only has this enabled renewable companies to undercut traditional coal and gas generating businesses, it has dramatically driven down wholesale electricity spot prices.

As South Australia's electricity distribution network operator, SA Power Networks' vision is that by 2030, all South Australians will share the benefits of the world's most advanced, decentralised and dynamic low-carbon energy system. SA Power Networks is developing innovative solutions to help connect more solar and enable new technologies like battery storage and virtual power plants, while also ensuring a safe, reliable and affordable network for all South Australians. Already SA Power Networks has the highest penetration of distributed solar of any gigawatt-scale energy system in the world and it's working on doubling its solar capacity in the next five years.

SA Power Networks is investing more than AU\$50 million during 2020-2025 in modernising the network and to adapt to the increasing demands on the grid. It is also building systems that will enable data analysis from hundreds of thousands of smart

distributed energy resources (DER) connections to optimise the operation of the network and unlock more value from network assets. SA Power Networks is improving its network planning and forecasting processes to accommodate future high-DER scenarios such as springtime reverse power flows and an expected 350,000 newly added electric vehicles charging on the network. It is also working with the South Australian government, the Australian Energy Market Operator and the state's transmission network operator, Electranet, to improve technical capabilities to help support the state's energy system during severe faults, extreme weather events or other abnormal conditions that could destabilise the system.

**SA Power Networks
has the highest
penetration of
distributed solar of
any gigawatt-scale
energy system in the
world**

LEADERSHIP IN THE CAPTURE AND CONVERSION OF METHANE

The decomposition of organic waste in landfill creates methane, a greenhouse gas with 28 times the global warming impact of carbon dioxide. Methane is also emitted during the underground coal mining process. EDL's Clean Energy sites help its landfill and coal mine customers capture and convert approximately 1 billion m³ of methane into electricity or renewable natural gas. During 2021, EDL helped to remove four million tonnes of greenhouse gases from the earth's atmosphere through methane conversions, and GHG emissions avoided in generating new electricity or natural gas. Most of these emissions reductions are enabled through EDL's 57 landfill gas ("LFG") power stations around the world and its 12 waste coal mine gas power stations in Australia.

EDL owns and operates a large portfolio of LFG powered stations in Australia, Europe and North America. Across sites, LFG is generated from methane produced by decomposing organic matter in refuse tips that would otherwise be released to the atmosphere or flared. EDL captures this methane and converts it to electricity, which also displaces the need to create new electricity from non-renewable sources.

EDL is investing in work that goes beyond the conversion of gas to electricity to also developing renewable natural gas ("RNG"). RNG is LFG processed to pipeline-quality standards making it fully interchangeable with conventional natural gas for use in industry or transportation.

In the United States, EDL has three fully operational RNG sites and another two in development. Operational since 2020, the Indy High BTU RNG Plant at the Indianapolis South Side Landfill converts landfill methane gas into approximately 680,000 MMBtu of pipeline-quality RNG each year, amounting to 19,000 tonnes of carbon emissions avoided annually. The recently completed Wood Road RNG Facility in Michigan will produce approximately 870,000 MMBtu of pipeline-quality RNG each year, which will displace approximately 29,000 tonnes of emissions per year versus combusting comparable fossil fuels. EDL's new Tessman RNG Facility in Texas will produce around 1.2 million MMBtu of pipeline-quality RNG each year resulting in 42,000 tonnes of avoided emissions, once operational in 2022.

During 2021, EDL helped to remove four million tonnes of greenhouse gases from the earth's atmosphere



HELPING REMOTE REGIONS OF AUSTRALIA TRANSITION TO RELIABLE CLEAN ENERGY

Australia is the sixth largest country in the world. While most of its population lives in its major cities, there are many rural and remote towns dotted across this vast land, located hundreds of kilometres from the closest major centre. Most are not connected to the electricity network and rely on trucked diesel to fuel their energy supply, which also exposes them to price volatility, reduced energy security and high carbon emissions. Since 2018, EDL has introduced its award-winning hybrid renewable technology to three remote sites across Australia, as outlined below.

Coober Pedy

EDL provides 100% of the electricity to the remote mining town of Coober Pedy in South Australia. EDL owns and operates the Coober Pedy Hybrid Renewable Power Station which combines 4MW of wind generation, 1MW of solar generation, a 1MW/500 kWhr battery and other integration technologies, with the diesel power station as a backup, achieving generation of approximately 75% through renewable energy for the town's power. This power station has delivered more stable electricity for the community at world-leading renewable energy penetration rates. It is setting a global benchmark for renewables in MW scale isolated grids with the longest continuous period on 100% renewables being 97 hours.

Agnew

Building on the success at Coober Pedy, EDL commissioned the 56MW Agnew Hybrid Renewable Project at the Agnew Gold

Mine in Western Australia in 2020. Comprising 18MW wind and 4MW solar generation, a 13MW/4MWh battery energy storage system and an offgrid 21MW gas/diesel power plant, the project is Australia's largest hybrid renewable microgrid and supplies the mine with power that is on average 50-60% renewable, with 99.99% reliability.

Jabiru

In 2021, EDL commenced construction of the Jabiru Hybrid Renewable Project in Australia's Northern Territory. Beginning operations in February 2022, the hybrid renewable power station provides the remote town of Jabiru with at least 50% renewable energy over the long-term, without compromising power quality or reliability.

EDL brings its award-winning hybrid renewable technology to remote regions in Australia



EDL's Agnew Hybrid Renewable Microgrid 56MW is first in the country to utilise wind generation on a large scale at a mine site

CARBON CAPTURE, USE AND STORAGE



AVR's CO₂ capture plant in Duiven

In a circular economy, the use of products and materials is maximised and value destruction is minimised because products are reused as much as possible.

AVR operates two plants including five waste treatment installations in Duiven, near the German border, as well as Rozenburg in the Port of Rotterdam area. AVR's purpose is to take residual, unrecyclable waste and with its expertise in smart incineration technology use it to create electricity, heat, steam as well as new process raw materials for surrounding households and businesses in Rotterdam and the Arnhem region in the Netherlands.

During 2021, 2,266,000 tonnes of unrecyclable waste was turned into valuable products and services that enabled 926,700 avoided CO₂ emissions, including:

	Product & impact	GHG Emissions avoided
	330GWh of process steam used by industry avoiding the use of gas-fired boilers.	74,500 tCO ₂ e
	1,540GWh of district heating avoiding the use of gas-fired boilers.	347,500 tCO ₂ e
	532GWh of electricity, of which 54% is renewable electricity.	261,700 tCO ₂ e
	448,100 tonnes of bottom ash is used as an input for construction materials (403,000 tonnes) with the remaining ferrous and non-ferrous metals (45,100 tonnes) recycled back into metals by scrap metal recyclers.	134,000 tCO ₂ e
	42,000 tonnes of CO ₂ captured annually and transferred for use in the horticulture sector replacing the need for natural gas-fired heat and power generators.	40,000 tCO ₂ e
	28,000 tonnes of bi-product after thermal treatment of biomass paper pulp residue which is converted to TopCrete®, a patented calcareous (chalky) product that is used as a cement substitute.	23,000 tCO ₂ e
	29,000 tonnes of plastic packaging material that instead should be recycled via a third party.	46,000 tCO ₂ e

Based on the volume of residual waste AVR currently processes, its target is to reduce its annual GHG emissions by 800,000 tonnes CO₂e by 2030 and be a net-zero operation by 2050. Large-scale carbon capture, use and storage is the next step in AVR's journey, which will act as a crucial part of its net-zero transition plan.

Taking action on climate change

Beyond the important role these businesses are playing in enabling a net-zero future they are also taking ambitious action and leveraging technologies to eliminate GHG emissions in as much as possible in their own operations and wider value chain.

GHG emissions reduction targets

The businesses within the Infrastructure division have set ambitious goals to help deliver on net-zero, many of which are leading in their industries and going much further and faster than the local regulatory contexts as outlined in Table 25. The Group continues to work on an Infrastructure-wide division target, which will be an area of focus during 2022.

Table 25: Business-level net-zero goals and plans

Business	Net-Zero Goal	Key plans to achieve net-zero
Australian Gas Infrastructure Group	10% renewable gas by volume in distribution networks by 2030; 100% renewable gas by volume by 2050 at the latest and 2040 as a stretch target.	<ul style="list-style-type: none"> Hydrogen Park Gladstone will begin blending 10% green hydrogen into an existing gas network of 770 homes. Hydrogen Park Murray Valley will extend this model of 10% blending of green hydrogen to an area of 40,000 residential homes and connections. The Dampier Bunbury Pipeline is one of the largest capacity natural gas pipelines in Australia and the backbone of energy infrastructure in the west. Its ability to store and transport hydrogen is currently being investigated in an 18-month State-backed research project.
AVR	Achieve net-zero in operations by 2050.	<ul style="list-style-type: none"> Increasing supply of CO₂ to horticulture greenhouses, steam supply to nearby industrial customers and supply of district heating. Exploring large-scale capture and storage in depleted offshore gas fields.
ista	Achieve net-zero in scopes 1, 2 and selected scope 3 by 2030.	<ul style="list-style-type: none"> Procurement of renewable electricity. Reducing the lifecycle footprint of products. Helping customers and users reduce their CO₂ emissions from heat consumption by 10% by 2030, versus a 2015 baseline. Converting entire fleet to 100% electric.
Northumbrian Water	Achieve net-zero in operations by 2027.	<ul style="list-style-type: none"> Ongoing use of 100% renewable electricity. Increasing generation of renewable energy onsite (solar and hydropower). Pilots of large-scale battery storage and the production of hydrogen in hydropower sites that cannot be connected to the grid. Commitment to create zero avoidable waste by 2025.

Business	Net-Zero Goal	Key plans to achieve net-zero
Northern Gas Networks	Achieve net-zero in operations by 2031 (excluding gas shrinkage) and net-zero across the value chain by 2050.	<ul style="list-style-type: none"> • Purchasing 100% renewable electricity and green gas and installing renewable energy production at all offices and depots by 2026. • Transitioning vehicle fleet to 50% ultralow emission or hybrid by 2026 and 100% by 2031 with supporting electric vehicle charging infrastructure. • Continuing metallic gas pipe replacement programme and system pressure management. • Biomethane and hydrogen will play an increasing role in displacing natural gas supplies, beginning first with blue hydrogen supported by carbon capture and storage, followed increasingly by green hydrogen. • Improving efficiency and reduced gas demand. Expectation that energy delivered through its network will reduce significantly, largely driven by increasing energy efficiency of homes and the uptake of alternative technologies such as heat pumps.
SA Power Networks	Achieve net-zero in operations by 2035.	<ul style="list-style-type: none"> • Working in collaboration with other market participants necessary to facilitate the uptake of renewable energy sources within the electricity network to reduce the GHG emissions stemming from distribution line losses. • Increasing the use of renewables via the installation of solar panels onsite. • Reducing the use of sulfur hexafluoride and sustainable fleet measures.
UK Power Networks	Achieve net zero for directly controlled operational GHG emissions (excluding network losses) by 2028.	<ul style="list-style-type: none"> • Using only renewable electricity in buildings. • Replacing all suitable vans and cars with electric vehicles (around two thirds of the fleet), making sure areas with poor air quality get first priority. • Introducing lower carbon fuels and hybrids into the mobile generator fleet.
Wales & West Utilities	Deliver a net-zero ready gas network by 2035.	<ul style="list-style-type: none"> • Shrinkage reduction through mains replacement. • Ongoing pressure management. • Connecting biomethane producers. • Delivering innovative projects to support hydrogen conversion for the network and gas customers.
HK Electric	Achieve carbon neutrality before 2050.	<ul style="list-style-type: none"> • Phasing out all coal-fired generation. • Plans for a large-scale offshore wind farm in Hong Kong.

GHG emissions performance

In 2021, total scope 1 and 2 emissions decreased by 12.9% versus 2020, and 21.8% versus 2018.

Accounting for 82% of GHG emissions, scope 1 emissions include direct emissions from sources owned or controlled by the division. Scope 1 GHG emissions decreased in 2021 by 14.7% versus 2020 mainly due to an overall decrease in the consumption of non-renewable fuel consumed such as diesel and natural gas.

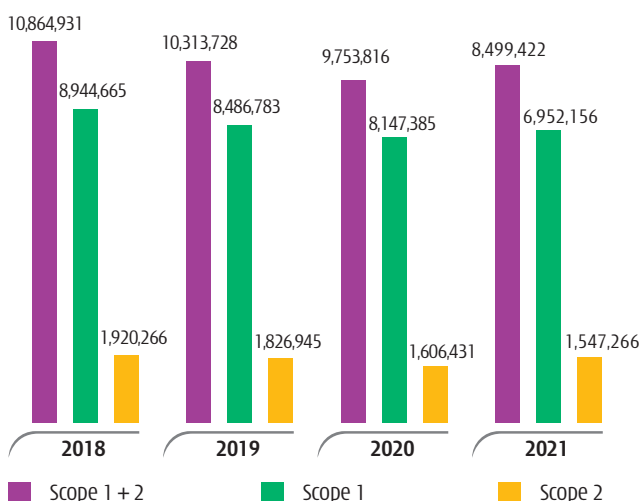
Accounting for the remaining 18% of GHG emissions, scope 2 emissions include GHG emissions from purchased electricity, and those associated with losses in the transmission and distribution networks for the electricity distribution companies. Scope 2 GHG emissions decreased by 3.7% in 2021 versus 2020 predominately due to the procurement of renewable electricity and increases in onsite solar generation.

Net-zero transition opportunities

The most significant transition opportunities for the Infrastructure division in terms of influencing its direct operation include:

1. Renewable and other clean energy generation;
2. Phasing out coal from all operations;
3. Energy efficiency;
4. Clean transportation;
5. Circular economy approaches; and
6. Climate risk and resilience

Figure 26: Scope 1 and 2 emissions performance (tCO₂e)



As mentioned upfront in the report, topics such as the protection of biodiversity and ensuring a just and equitable transition are also fundamental to net-zero planning, these are also discussed on pages 112-113 and 119-120.

1. Renewable and other clean energy generation

In 2021, the Infrastructure businesses were responsible for generating 6,405GWh of renewable and other clean energy (on a gross basis), the largest source being biogas.

Table 27: Renewable and other clean energy generated by the Group's businesses

Renewable and other clean energy source	Installed capacity (MW)	Generation in 2021 (MWh)	Emissions avoided p.a. (tCO ₂ e)
Biogas*	435	2,092,387	2,735,243
Solar	7	11,955	1,865
Wind	182	485,380	356,291
Green hydrogen	1	628	272
Waste coalmine gas	298	1,413,133	1,224,327
Waste-to-energy**	170	532,000	261,700
Renewable heat and industrial waste heat	390	1,870,000	422,000
Total	1,483	6,405,483	5,001,698

Note:

* Biogas produces both electricity and renewable natural gas. The MW's installed capacity and MWh's generated in 2021 includes the renewable natural gas converted from MMBTU's.



** 54% of the energy output was classified as renewable (biomass origin) and was certificated with Guarantees of Origin.

Biogas

Biogas is a renewable energy produced by the breakdown of organic matter such as food scraps and animal waste. It can be used in a variety of ways including as vehicle fuel and for heating and electricity generation. The precise composition of biogas depends on the type of feedstock and the production pathway. Technologies leveraged by the Group include: biodigesters, landfill gas recovery systems and wastewater treatment plants.

Biomethane (also known as “renewable natural gas”) is a near-pure source of methane produced either by “upgrading” biogas (a process that removes any CO₂ and other contaminants present in the biogas) or through the gasification of solid biomass followed by methanation. One of the benefits of biomethane is that this renewable fuel can directly replace fossil fuel-based natural gas without the need for any changes in transmission and distribution infrastructure or end-user equipment, and is fully compatible for use in natural gas vehicles.



Table 28: Biogas

	Projects	Generation in 2021 (MWh), gross basis	Annual avoided GHG emissions
	EDL's landfill gas to electricity and renewable natural gas sites across Australia, North America and Europe help its landfill customers capture and convert approximately 600 million m ³ of methane into electricity or renewable natural gas.	2,052,487MWh	2,731,215 tCO ₂ e
	EnviroNZ's Hampton Downs landfill converts over 850,000 tonnes of waste into electricity.	39,900MWh	4,028 tCO ₂ e

Wind and solar

In 2021, the Group's businesses were responsible for generating 485GWh of wind and 12GWh of solar.

Table 29: Wind and solar generation

	Projects	Generation in 2021 (MWh), gross basis	Annual avoided GHG emissions
Dali and Laoting Wind Farms	Via investments through Power Assets the Group holds interest in two wind farms in Mainland China – a 48MW site in Dali, Yunnan Province and a 49.5MW site in Laoting, Hebei Province. The Dali Wind Farm has 64 units of 750kW wind turbines and the Laoting Wind Farm has 33 units of 1.5MW wind turbines.	213,000MWh	207,000 tCO ₂ e
	EDL is a leader in providing remote, off-grid communities and operations around Australia with innovative hybrid renewable energy systems incorporating wind and solar.	184,335MWh	91,156 tCO ₂ e
	In 2021, the Group acquired Okanagan Wind in British Columbia, Canada. The electricity generated is sold to BC Hydro under a 40-year electricity purchase agreement.	97,800MWh	60,000 tCO ₂ e

EDL's hybrid renewable microgrid at Agnew is Australia's largest and supplies the mine with power that is on average 50-60% renewable and with 99.99% reliability



Hydrogen

The Group generated 628MWh of green hydrogen in 2021. While small at this stage, it is considered a significant investment opportunity for the Group in terms of both new investments and decarbonising current investments. The Group's businesses are continuing to launch pilots that are laying the foundation for large-scale expansive rollouts.

Table 30: Hydrogen developments



Using a 1.25MW electrolyser powered by renewable electricity, Hydrogen Park South Australia is Australian Gas Infrastructure Group's and Australia's first project that produces green hydrogen for blending with natural gas at volumes of up to 5% and supply to nearby homes via the existing gas network. Australian Gas Infrastructure Group is also developing Hydrogen Park Gladstone with the aim to distribute a blend of up to 10% renewable gas to more than 770 homes and businesses throughout an entire city's existing gas network, another Australian-first.



The Group's gas distribution networks businesses are together part of leading the hydrogen transition of gas networks in the UK. This transformational change requires rigorous testing to prove the safety case to the UK government to pave the way for long-term, large-scale replacement of fossil fuel-based natural gas with low-carbon hydrogen.



With its partners, Northern Gas Networks has launched the world's first 100% hydrogen testing facility. Building on this, Northern Gas Networks is piloting a 20% blend of hydrogen in a local gas supply in the village of Winlaton in the North East of England.

In August 2021, Wales & West Utilities received the green light from the Health & Safety Executive to inject gas containing up to 1% hydrogen into its gas network in Swindon, the first such exemption outside of innovation trials on the UK network.

Earlier this year both companies joined together with Britain's other gas network companies to develop Britain's Hydrogen Network Plan, which sets out the detailed action plans to turn Britain's hydrogen ambitions into reality. This includes working towards blending up to 20% hydrogen into local gas grids by 2023 and converting villages to run on 100% hydrogen by 2025.



UK Rails is collaborating with Alstom to explore the technical and commercial feasibility of building the UK's first brand-new hydrogen train fleet. The agreement aims to share technical and commercial information necessary for Alstom to design, build, commission and support an initial fleet of hydrogen trains. In 2021, UK Rails also entered into an agreement with H2 Green, a hydrogen network operator, to help develop the hydrogen supply solutions required to support wide-scale deployment of hydrogen-powered trains.



Wales & West Utilities' production plant in Swindon with 1% hydrogen injection



Australian Gas Infrastructure Group's Hydrogen Park South Australia

Waste coal mine gas

Waste coal mine gas is produced during the coal mining process as methane gas trapped in coal seams is extracted ahead of the underground mine. A highly potent GHG-intensive waste product that is often vented or flared, the extracted methane is now used by EDL as a power generation fuel, delivering reliable and clean energy to eastern Australia's Electricity Grid, significantly reducing GHG emissions. In 2021, EDL created 1,413GWh of clean energy and removed 1,224,327 tonnes of CO₂ emissions from entering the earth's atmosphere.

Waste-to-energy

AVR's purpose is to take residual, unrecyclable waste and with its expertise in smart incineration technology, use it to create electricity, heat, steam as well as new process raw materials. AVR generates 532GWh of clean electricity annually, of which 54% of the waste is classified renewable due to its content of biogenic waste content. This electricity generated amounts to 261,700 tonnes of avoided GHG emissions.

While there are critics to the waste-to-energy industry which question whether waste should be incinerated, but instead recycled, the reality is however that not all waste can be recycled and this residual waste still needs to be treated. Indeed, waste-to-energy and recycling are complementary waste treatment methods in integrated waste management systems. Household and similar waste should be sorted at source and the clean materials should be sent to high quality recycling. The remaining waste, that cannot be recycled in a technically or economically viable way, should be used to generate energy (electricity, steam and power), among other useful materials.

To ensure that AVR can achieve its goal of reducing its GHG emissions annually by 800,000 tonnes by 2030, and be a net-zero operation by 2050, AVR is exploring large-scale carbon capture and storage in depleted offshore gas fields, in combination with its ongoing programme of carbon capture and use in supplying CO₂ to horticulture greenhouses.

In 2021, EDL was awarded AU\$9 million by the Australian Department of Industry, Science, Energy and Resources for its study on capturing CO₂ from biomethane production waste streams for injection into concrete. Further studies will be carried out to investigate how the highly concentrated CO₂ stream can be purified, compressed, liquefied and stored for transportation to customers or use in carbonation curing.

Renewable energy connections

The Group's electricity distribution companies, UK Power Networks, SA Power Networks, and Victoria Power Networks are evolving their business models from distribution network operators to distribution system operators. Instead of simply managing a passive network supplying electricity over the "last mile" to customers, they are needing to actively manage a dynamic, two-way electricity system that also integrates customers' smart energy resources. They are therefore enabling customers to be both consumers and producers of energy through more solar connections while integrating the smart batteries and virtual power plants that will play a vital role in balancing supply and demand in a future energy system dominated by renewables. With the rapid transition to electric vehicles globally, these networks will also become the primary source of energy for road transport.

Innovation, digitalisation and cutting-edge technology are at the heart of this transition in electricity networks. In May 2021, UK Power Networks launched the Constellation project, installing powerful computers in a series of substations, turning them into smart substations, reducing the reliance on communications to and from the central control systems. These substations will analyse millions of data points on how the network is running, and re-configure the network based on specific conditions. The project will increase the resilience of the distribution network, facilitate a rapid increase in renewable energy generation, while also saving consumers across the UK more than GBP750 million by 2050.

SA Power Networks' solar feed-in management capability is one of the most advanced in the world. In 2021, its Enhanced Voltage Management solution won the Premier's Awards: Energy and Mining in the Innovation and Collaboration in Energy category. The solution allows the business to better manage solar feeds into the electricity distribution network. Working with the South Australian Government and Australian Energy Market Operator, SA Power Networks developed this innovative voltage management solution, which not only significantly improves network capacity to host solar but also provides a solution to manage system security emergencies.

Battery storage also has an important role to play. As part of the Victorian Government's Neighbourhood Battery Initiative, Powercor has received funding to install a community battery to support the growth of rooftop solar in Melbourne's west. Under the plan, Powercor will install a 150 kW/388 kWh battery in Tarneit that will allow customers to share their rooftop solar with others and make the most of the strong local rooftop solar penetration in the area. CitiPower and Powercor are also exploring opportunities to locate community batteries across parts of Melbourne as part of an extensive study which is also funded by the Neighbourhood Battery Initiative. It will examine the best locations for batteries, considering factors such as community benefits, local power demand and network constraints.

3. Energy efficiency

Being in the business of distributing energy, huge amounts of energy may be saved, lost or consumed based on not only direct measures taken, but also due to factors that are outside of their control such as in the case of leakages and losses from networks.

Leakages and losses

One of the greatest challenges an energy network must face with respect to GHG emissions reduction relate to inherent losses in energy systems, termed "losses" or "leakages". While there are many efforts the Group's gas and electricity network distribution businesses take, such as ongoing pipe and mains replacement, technical losses are an unavoidable consequence of energy distribution. Further, the extent of GHG emissions generated will also rely on how the throughput energy is generated i.e. be it from fossil-fuel based GHG emissions or renewable sources.

Table 31: Coal to gas conversion plans



Following the commissioning of a gas-fired unit (L10) in 2020, HK Electric took another major step forward in its transition from coal to gas-fired generation with the successful synchronisation of another new gas-fired unit (L11) in November 2021. HK Electric will also commission another new gas-fired unit (L12) in 2023 and gradually phase out the remaining coal-fired units by the early 2030s.



The 800MW Sheerness Generation Station fully phased out coal-generation in 2021, which will effectively reduce GHG emissions from Canadian Power's 200MW stake by 45-50%.

2. Phasing out coal

Coal fuelled the industrial revolution and today coal remains the world's most dominant source of energy and a major cause of GHG emissions warming the planet. As highlighted by the UN, if it not phased out [before 2040](#), the global 1.5 °C goal set to limit the worst effects of climate change will fall quickly out of reach. The Group has made a new commitment to phasing out all coal globally by 2035. Due to actions taken in 2021, the businesses in OECD countries have fully phased out coal-fired generation, with the balance remaining in non-OECD countries; this progress and plans are further detailed in Table 31.

To date, coal-fired generation installed capacity has reduced from 53% in 2016 to 32% in 2021. This will further reduce to 24% by 2023 and to zero by 2035.

While the decision of throughput energy for the Group's distribution networks is outside of its direct control, they are taking every available step to ready their networks for a transition to renewable and clean sources. The Group's gas businesses are ensuring their distribution networks are hydrogen-ready and the electricity distribution businesses are facilitating the transformation of traditional electricity distribution through enabling increasing levels of renewable energy to be connected to the grid.

UK Power Networks has invested in a fleet of new Unimog vehicles for overhead line work



Demand-side flexibility

Demand-side flexibility provides customers with an opportunity to play a significant role in the operation of the electric grid by reducing or shifting their electricity usage during peak periods in response to time-based rates or other forms of financial incentives with the opportunity to deliver significant savings. On the other hand, it also enables electricity distribution networks to use this resource as an option for balancing supply and demand, as well as ensuring a secure, sustainable and affordable electricity system. It can help soften peaks in demand and fill in the troughs, especially at times when power is more abundant, affordable and clean.

UK Power Networks has led in this approach to flexibility since 2018, when it became the first network operator in the UK to commit to a radical “Flexibility First” approach to cater for new connections, which has saved connecting customers GBP72.6 million over the period of 2016-2020.

In September 2021, SA Power Networks launched a trial of its smart “Flexible Exports” system in Adelaide’s southern suburbs, a world-leading technology that enables new solar customers to export up to 10kW per phase from their panels, doubling the current standard export limit. Flexible export limits offered under the trial will enable more customers to connect solar and provide greater solar export opportunities throughout the year.

An important tool in enabling demand-side flexibility, and importantly in enabling customers to connect renewable energy they have generated to the grid, is the deployment of distributed energy resources which are small-scale electricity supply or demand resources, such as rooftop solar PV units, or micro turbines, that are interconnected to the electric grid.

Products and services in energy efficiency

Through ista’s data-based suite of digital solutions for smart property management, ista enables residents and owners of buildings to take control of their energy consumption. In Germany alone, 3.7 million tonnes of CO₂ are saved every year thanks to reductions made in the annual heating cost bills enabled through ista’s solutions. ista’s aim is to help customers and users reduce their CO₂ emissions from heat consumption by 10% by 2030, versus a 2015 baseline.

In 2021, ista launched its digital power tool, MinuteView, for efficient energy management in commercial properties. With opportunities to reduce energy consumption by up to 15%, MinuteView can track and compare energy consumption among individual sensors, buildings, locations and countries. A digital climate protection programme for the building sector was also announced with the aim of reducing GHG emissions. ista intends to equip 10 million apartments with digital metering devices and wireless infrastructure by 2025.

Reliance Home Comfort, which offers both the sale and rental of water heaters, HVAC equipment, comfort protection plans and other services to homeowners primarily in Ontario, Canada, has been expanding its offering of Green Home Solutions such as energy efficient heat pumps, smart thermostats, and tankless water heating systems that can create efficiencies of up to 96%.

The Group's energy distribution businesses are also helping their customers save energy and reduce their bills. Common customer engagement activities include dedicated online sections including downloadable guides and videos with easy tips for being energy smart, as well as active outreach including training and opportunities for personalised consultations, often delivered through partnership arrangements with expert energy advisors. In 2021, HK Electric completed 210 free energy audits for non-residential customers, subsidised 108 buildings for implementing energy efficiency enhancement projects, and organised 350 educational and promotional activities on combating climate change and adopting a low-carbon lifestyle.



Customer engagement at Wales & West Utilities


4. Clean transportation

Transitioning to zero-emission fleets is essential to the Infrastructure businesses net-zero transition, notably where there are large fleets being used by field teams for customer visits needed for meter readings, for example. As similar with other divisions, barriers can sometimes exist where a particular vehicle model and range requirement for operational necessities is not yet fully offered by the market.

Targets already set include:

- Northumbrian Water Group aims for all new vehicle purchases for its fleet of 1,000 to be zero-emission by 2024;
- UK Power Networks aims to replace all suitable vans and cars with electric vehicles (around two thirds of the fleet), making sure areas with poor air quality get electric alternatives first;
- Northern Gas Networks aims to make 50% of its total vehicle fleet ultra-low GHG emission or hybrid by 2026, and 100% by 2031, and to install charging infrastructure across all offices and depots; and
- Wales & West Utilities is committed to ensuring that 75% of company cars are hybrid or ultra-low GHG emission vehicles by 2026.

The Group's network operators are not only rolling out their own electric fleets but also enabling the rollout of electric vehicles and helping to solve challenges that will come with millions of new electric vehicles and chargers being connected to the network.

For example, UK Power Networks forecasts suggest between 1.6 and 2.7 million electric vehicles could be powered through its three networks by 2028. To meet this rapid increase, UK Power Networks is innovating to meet the technical challenge of an unprecedented large-scale shift to electric transport. UK Power Networks' comprehensive [Electric Vehicle Strategy](#)  outlines the partnerships underway to develop, test and deliver technical and commercial solutions that facilitate the rapid uptake of electric vehicles and the whole systems approach planned to maximise the utilisation of its existing electrical infrastructure.



Northumbrian Water deploys electric fleet for its daily operation

5. Circular economy approaches

The Group's role in contributing to a circular economy is best exemplified by its waste management and processing facilities.

EnviroNZ has been scaling up its organics infrastructure so it can play a bigger role in New Zealand's fight against both organic waste as well as climate change. The business achieved a milestone in October 2021, with the completion of a three-year project to expand its Hampton PARRC organics processing facility. It has doubled its capacity to process green waste and food scraps from its customers and can now handle up to 24,000 tonnes per annum. Rather than this waste ending up in landfill, it is now turned into nutrient-rich compost for residential and commercial use, enabling the reduction of approximately 3,500 tonnes of CO₂ emissions.



EnviroNZ organic waste collection in action

During 2021, AVR used its waste to energy and circular economy technologies to turn 2,266,000 tonnes of unrecyclable waste into valuable new resources.

Green Island Cement's new slag-grinding plant in Hong Kong grinds slag, a by-product from the steel industry, produces ground granulated blast-furnace slag ("GGBS"), a more sustainable cement substitute. The plant has the capacity to produce about 350,000 tonnes of GGBS each year. When added to concrete, GGBS improves long-term strength and extends the durability.

In 2019, ista established the Circular Economy Working Group and appointed a Waste Management Officer with the aim to analyse the flows of recyclable materials in the company, consulting with external partners and testing ideas to eliminate waste. When developing its meters or heat cost allocators, ista now integrates circular economy principles at every step of the lifecycle. It co-ordinates action with its partners along the value chain: from device manufacture and installation to recovery of the devices at end-of-life. The aim is to make its products durable, easy to re-use and easy to recycle, thus creating a closed-loop supply chain. What also helps in ensuring oversight and quality of this process is that most of its devices are leased to customers meaning that together with the in-house expertise to ensure these products are maintained for their maximum lifecycle, the business also ensures they are recycled through specialist, certified recyclers.

UK Rails contributes to circular economy through its new SWIFT Express Freight product, which offers a cost-effective and low-carbon solution for transporting parcels around the UK. The product extends the life of assets by repurposing passenger trains to freight-carrying units. In addition, end-of-life trains can be up to 92% recyclable, and once a train needs to be scrapped, UK Rails works with carefully vetted suppliers including those certified against ISO 9001, ISO 14001 and Railway Industry Supplier Qualification Scheme (RISQS) Waste Disposal.

Northumbrian Water has committed to creating zero avoidable waste by 2025. This will mean eliminating, re-using or recycling 90% of waste from their operations, and working with partners to contribute to the circular economy in their regions.

For the gas distribution networks, the majority of waste created relates to "spoil", i.e. construction waste created through installing and maintaining pipes. With stringent regulatory quality and safety requirements for reusing this spoil, the networks have worked to develop new and innovative recycling measures so that it is fit for reuse. At Northern Gas Networks, less than 0.14%

of spoil is now going to landfill and it has reduced its use of virgin aggregate by over 76%. Reductions have also been achieved by driving innovations in processes and technologies such as no-dig technology. These major improvements are the result of a far-reaching programme which saw the business campaign for more local recycling facilities, and educate and incentivise its supply chain to also follow resource-efficient practices. Northern Gas Networks is also leading work with other utilities and suppliers to move away from single use plastic packaging for utility fittings and has also written on behalf of all gas distribution network operators to ask major pipe manufacturers to do so.

6. Climate risk and resilience

Millions of customers globally rely on the essential services provided by the Group. Enhancing resilience and reliability through future-proofing this infrastructure in the face of more extreme and unpredictable weather is critical. There are two categories of climate risks that are particularly prevalent for the businesses: flooding and storms, and bushfires.

Flooding and storms

In 2011, responding to the UK Government's concerns on climate change, Wales & West Utilities took a leading role in developing a pioneering tool to help utilities take action to protect their assets

from increased flood risks, working in partnership with Landmark and Ambiental Risk Analytics. Following four years of mapping in the pilot, the mapping product was launched in 2018 as Britain's first national flood map incorporating current and future predictive flood scenarios for 2020 and far beyond. Wales & West Utilities was also the first utility in the UK to use the data as part of its UK Climate Change Adaptation Risk Assessment, Reporting and Investment requirements.

Flooding has been identified as one of the top climate risks in UK Power Networks' latest Climate Adaptation Report released in December 2021. Accumulated rainfall, overflowing rivers, sea level rise, reservoir breach and water main burst can lead to severe water ingress to critical electrical assets and ground-mounted transformers, causing equipment damage and loss of power supply to its customers. Mitigation solutions such as water-resistant bunding and flood gates are delivered at existing substations. The business has also integrated flood risk into business-as-usual by revising its technical design standards for substations to be more resilient against flooding, including measures such as raised switchgear installation. As of today, UK Power Networks has protected over 2.8 million customer connections from flood risk, reduced our customers at risk of flooding from an average of 70% in 2011 to an average of 13% in 2021.



UK Power Networks completes a £500,000 flood defence scheme to increase the resilience of electricity supply to 69,000 homes and businesses

UK Power Networks' Storm Resilience project developed an advanced tool that combines network data, historic fault data and live weather forecasts to predict the number of faults that could occur in an area of the network. This project is taking how the business handles storms to a new level, by combining data science with improved customer service. This is particularly helpful in times of stormy weather to ensure enough engineers are on standby. A separate part of the project trialled a lightning tracking software to help restore power supplies caused by lightning strikes up to 90% faster.

Northumbrian Water delivered a multi-award winning scheme in Killingworth, North Tyneside, which worked to reduce flood risk in times of heavy rain protecting thousands of homes in the surrounding areas, as well as improving water quality and the surrounding biodiversity. Instead of flowing back to the sewerage system, overflows from the lake spill into natural grassed areas alongside the bank and drain back to a local watercourse instead. Three floating island ecosystems, which were designed and built by Biomatrix Water, have been installed in Killingworth Lake to improve biodiversity and provide natural habitats for wildlife such as fish and nesting birds in the area.

Bushfire risk

The electricity distribution businesses in Australia are particularly at risk from bushfires which are exacerbated by rising temperatures. They therefore invest millions every year to reduce the risk of bushfire and loss of power supply in communities.

In hazardous bushfire risk areas, Victoria Power Networks is undergrounding power lines and installing high technology covers over power lines to protect them from climatic conditions. To further reduce fire risk, the business uses advanced Light Detection and Ranging (LiDAR) technology to continually improve the accuracy of scanning and detection of vegetation growing near power lines and ensure overhead conductor clearances remain compliant to Australian Standards throughout their lifetime.

During 2021, Powercor successfully completed the second tranche of a major bushfire mitigation technology rollout and has now installed Rapid Earth Fault Current Limiters ("REFCL") in 18 zone substations, providing additional protection for 15,500 kilometres of the network. Acting like a giant safety switch, the REFCL provides additional protection to the community by reducing voltage levels within milliseconds to mitigate fire risk if a tree strikes powerlines or if lines hit the ground. In recognition of Powercor's successful delivery of the REFCL programme across the distribution network in Ballarat, Greater Bendigo, Ararat and Terang, the business was

awarded the Australia Institute of Project Management Project Management Achievement Award in the regional project category.

Similarly, SA Power Networks undertakes a range of bushfire risk preparation, mitigation and adaptation activities, including partnering with organisations such as the Bureau of Meteorology, the Energy Networks Association and the Commonwealth Scientific and Research Organisation to undertake sophisticated modelling to enable more targeted activities.

Protecting biodiversity

Many of the businesses are introducing an environmental "net gain" philosophy into their operational ethos and leading their industries with these approaches. Highlight projects from the businesses include:

- Northumbrian Water has completed its first natural capital account for its southern landholding in Essex, Suffolk and Norfolk. The account combines data on the extent and condition of natural capital assets in the landholding, the benefits they produce, and the value of those benefits to society, in both non-monetary and monetary value. The account provides a baseline assessment of the landholding's natural capital and establishes a consistent way of measuring. Northumbrian Water is working with specialists to develop an in-house tool to evaluate the biodiversity value of all sites larger than 0.2ha. Sites have been ranked from 1-10 so that they can start to monitor change of impact as well as identify sites that need more work.
- Northern Gas Networks has committed to measure and report the natural capital value of up to 50 of its largest asset sites by 2026. Using a bespoke tool developed for Northern Gas Networks by specialist consultants, the assessment provides a valuation in both technical biodiversity units and financial value for relevant ecosystem services provided by the sites. The assessment will be undertaken across the sites three times during the period to identify changes in natural capital in response to Northern Gas Networks land management activities. The findings of these assessments will be publicly reported in Northern Gas Networks' Annual Environmental Report. The tool can also be used to review and assess the natural capital impacts of different design solutions to inform project optioneering and business case production. Northern Gas Networks is also working with maintenance contractors and local groups to deliver site-specific measures such as creating habitats, installing bat and bird boxes, and even a nest camera for a bird watching club to observe peregrine falcons on a gas holder. In 2020, it also entered a five-year partnership with the Community Forest Trust to plant 40,000 trees in areas of its network with high urban air pollution.

- UK Power Networks has committed to a Networks Green Action Plan to enhance biodiversity around its sites, in particular substation sites. As part of the Plan, UK Power Networks identified 100 sites using the Department for Environment, Food and Rural Affairs (“DEFRA”) calculator and partnered with ecological experts, ADAS and Wildlife Trusts, to assess the sites and determine a baseline biodiversity measurement. Following each survey, a biodiversity management plan was prepared with site-specific measures to enhance the biodiversity potential. By 2021, UK Power Networks aimed to have identified 100 suitable sites, baselined the biodiversity and developed management plans to improve biodiversity potential by an aggregate of 30%. This phase is complete and the implementation work to address the actions in the plans has commenced with some early success on those sites completed to date.
- Wales & West Utilities has a long-term ambition to achieve biodiversity net gain by 2039, with an interim goal of achieving no net loss on designated products within 2021 and 2026. To ensure the integrity of the network, it is sometimes required to remove trees that represent a risk to the infrastructure (e.g. gas pipelines). To mitigate this impact, Wales & West Utilities is collaborating with stakeholders within Wales and the South West of England to support afforestation across the network in long-term managed schemes through a commitment to plant five trees for every tree that requires felling.
- HK Electric has commissioned a consultancy study on the biological diversity of the Lamma Power Station to establish its biodiversity baseline and recommend measures to protect and promote the biodiversity of the asset. HK Electric, together with CLP Power, has established a Marine Conservation Enhancement Fund and a Fisheries Enhancement Fund under the Hong Kong Offshore LNG Terminal Project. These Funds support scientific research, promote environmental education, and support the local fishing industry, amongst other biodiversity-related activities.



As part of the Abberton Scheme, Northumbrian Water enhanced the Abberton Reservoir for birds and other wildlife

Creating a great place to work

The division is committed to creating rewarding and inclusive workplaces for all employees with the firm belief that attracting and retaining the best talent the industry has to offer is fundamental to ongoing success.

Health and safety

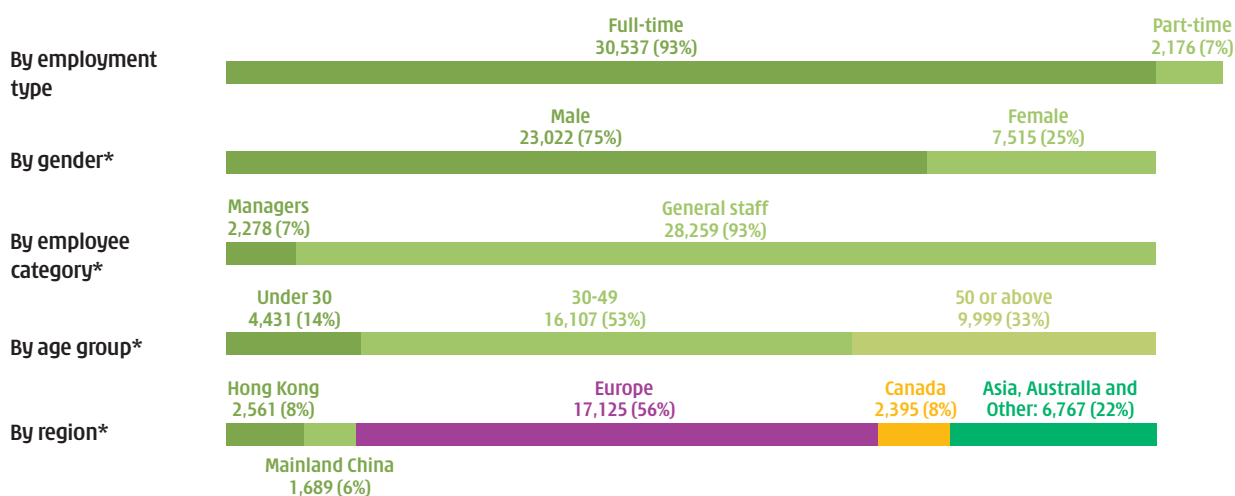
For the Infrastructure division, safety is the number one priority. The division's management approaches are driven by a fundamental belief that all of its people, employees and contractors, have the right to go home safe and well to their families every day. The division's goal is to create a controlled work environment where its people and assets are safe and its operations have minimal impact on the environment and project area communities. Plans and processes are in place to help prevent, prepare for, respond to, and recover from potential emergencies such as fire, oil and chemical spills, typhoons, flooding, emergency evacuations, rescues from confined spaces, and heat-stroke treatment.

It is with great regret however to report the work-related deaths of two employees in 2021 as a result of traffic accidents, which were as a result of third party actions unrelated to the businesses operations.



Safety prioritisation at Wales & West Utilities

Figure 32: Employee profile as at 31 December 2021



* full-time employees only

Safety culture

The Infrastructure division has made considerable progress in creating a culture of zero harm across its businesses and has set the tone by: i) including safety KPIs in the compensation schemes of all its businesses CEOs and executive management; ii) making health and safety the first item on the agenda of any of its global board meetings; and iii) holding an annual health and safety conference including representatives from each of the Infrastructure businesses. Top management's commitment to health & safety is further formalised in the Health & Safety Policy.

In order to foster a positive culture of health and safety, robust safety management systems exist across the businesses with many certified to ISO45001 or OHSAS 18001 and including

procedures for hazard identification and risk assessment, industry-specific standard operating procedures, emergency preparedness procedures as well as ongoing monitoring and measurement.

As an example of management approach, EDL's dedication to safety is embedded in its culture through a range of initiatives including:

- Oversight from the Global Safety Committee which meets monthly, with participation from corporate and operational support services staff;
- A comprehensive safety culture survey conducted every two years through an independent third party that monitors and ensures the business is enabling a consistent maturity of safety culture globally;

- The Health, Safety and Environment Leadership Awards where the business is rewarding excellence in safety and environmental stewardship based on employee-led nominations;
- The Take 5 initiative, which serves as a hazard and risk review prior to a task being conducted;
- EDL's Shared Analysis Management system which provides an effective hazard and incident management recording and reporting process; and
- Emergency Management and Crisis Management Awareness training to ensure senior managers are well-positioned to respond swiftly to emergencies and crises as well as annual update of the Crisis Management and Business Continuity Planning Programme.

The increased focus on safety leadership, improved reporting and the effective delivery of the Take 5 process has changed behaviours across the EDL global workforce resulting in improved safety awareness.

During the pandemic, while many professions have been able to work from home, much of the division's employee base remained critical to providing essential services. Protecting their safety during this crisis has therefore been a priority.

At the start of 2020 and as the impact of COVID-19 was being realised, Northumbrian Water's Business Resilience Group and Executive Leadership Team set up a COVID-19 Response Team to investigate and act on the impact the pandemic would have on employees, customers and the business. The group met weekly to review guidance by the UK government as well as review business plans, guidelines and activity. A key step taken in protecting employees was the in-house developed COVID-19 60 Second Check Tool for field teams to enhance safety before jobs are being carried out. The app follows a simple hierarchy of control that guides employees on what to do in their daily activities to keep them and their colleagues safe. After the initial launch, the tool was adopted enthusiastically by field teams with just under 66,000 checks carried out in just 10 months.



Northern Gas Networks and Yorkshire Centre For Training and Development join forces to upskill workforce for the future

Training

Continuous high-quality health and safety training for employees and contractors is fundamental.

The SA Power Networks Safety Leadership Academy was launched in early 2018 to continue to mature the organisation's safety culture by encouraging and educating leaders and workers to challenge their existing approach to safety and leadership. The programme involves a challenging and interactive series of workshops, underpinned by SA Power Networks' Work Safe Values and Standards. It introduces the principles of "human factors" and their involvement in safety related events and the Just and Fair Framework to guide consequences for both positive and negative safety behaviours. Further all contractors must complete a workplace health and safety induction before starting work on one of its sites or projects.

Training programmes that have influenced Northern Gas Networks' culture include:

- Safety Learning Clinics to review events with a view to identifying and taking forward improvement opportunities and create an increased sense of accountability and ownership within the business;
- A series of Behavioural Safety workshops delivered to employees and contractors looking at what causes incidents; and
- The Leadership Development programme that has been completed by the Senior Operational Leadership team.

UK Power Networks requires all operational employees to complete the "Worker Accreditation Programme" every three years to ensure their competency levels remain up to date. This process is monitored through refresher courses, training, knowledge tests, safety visits, and operational audits. The latest cycle was completed in December 2021, with all operational staff passing the required threshold.

EDL aims to ensure all contractors are aware of its safety policy and system requirements by requiring them to complete a suite of training courses before they begin any work.

Monitoring and Feedback

Health and safety monitoring systems and formal audit programmes are in place across all businesses. Audits on the safety management system at the corporate level, Transmission and Distribution Division-level and Generation Division-level are conducted at least annually by registered safety auditors to ensure all necessary safety regulations and requirements are strictly followed.

UK Rails has an external Safety Panel that meets on a quarterly basis and is chaired by an independent industry expert. The Panel oversees the work of the business' internal Operational Safety Committee to ensure its effectiveness. With suppliers of heavy maintenance, UK Rails encourages suppliers to achieve industry-leading Railway Industry Supplier Approval Scheme certification. Suppliers are further vetted against its Group Supplier Approval and Management Procedure that also requires all safety-critical suppliers to be issued a copy of its Supplier Safety Assurance Assessment framework. In addition, it checks the maturity of its suppliers' systems and processes against its Supplier Safety Assurance Assessment Roadmap, from their safety risk management to ensuring staff competency.

HK Electric employs a number of mechanisms to manage the safety performance of its contractors. It requires contractors to demonstrate a commitment to high standards of health and safety and encourages every contractor to aim for zero fatal accidents, dangerous occurrences, and reportable incidents. HK Electric requests all contractors to submit their safety plans within 28 days after contracting.

Seabank Power operates a stringent process to ensure all contractors engaged meet an adequate safety standard. All potential suppliers must submit a Supplier Information Form, which includes statistics on their health and safety activities. Seabank Power also requests a copy of their health and safety policy to ascertain contractors' suitability before contractor approval. UK Power Networks requires all its external contractors to comply with baseline health and safety policies. To verify this, UK Power Networks monitors the performance through inspection, audit, and performance review meetings.



Apprenticeship in action at Northern Gas Networks

Employee wellbeing

The pandemic has further focused attention on employee wellbeing and ensuring employees both out in the field and those working from home feel supported.

As part of its employee health and wellbeing digital platform, Living Well, Northumbrian Water provides financial wellbeing support, physical health sessions that include desk yoga, Pilates and resilience building workshops. It supports annual events such as World Mental Health Day, World Kindness Day and Men's Health Week and provides tailored information on specific issues. For Northumbrian Waters' 2020 Employee Survey it again worked with the Great Place to Work Institute, where it received its highest response rate, with 84% of employees responding. From this, they assessed a range of questions and those relating to health and wellbeing saw strong results that resulted in Northumbrian Water being named a Centre of Excellence for Wellbeing 2021.

Northumbrian Water has also been a member of the Better Health At Work Award programme, also receiving the Wellbeing Ambassador award, which recognises the efforts of employers in the North East and Cumbria in addressing health issues within the workplace. This recognition is awarded to a select few each year and goes to those employers who demonstrate both long-term commitment and outstanding programmes in workplace health and wellbeing, going above and beyond at every stage of assessment.

SA Power Networks extended its online health hub in 2020 to include the Health Hub @ Home platform which focuses on the health challenges arising from working from home. Features such as mental health, first aid, mindfulness and resilience training courses, and a Traumatic Event Response service for workers exposed to distressing incidents have also been made available to support employees' physical and mental health. SA Power Networks and Enerven are committed to creating a culture that encourages conversation and engagement in support of activities relating to the mental health their staff. A key initiative of this commitment is the Mental Health First Aider (MHFA) programme that teaches employees the skills to help someone who they're concerned about. MHFA's are formally trained volunteers embedded within work groups.



Teamwork at SA Power Networks

Attraction and retention

The Infrastructure businesses offer competitive market-based salaries for all employees as well as a range of non-statutory benefits, including monetary and non-monetary (such as wellbeing benefits) to ensure employees feel supported and rewarded.

Like many businesses driving the net-zero agenda, SA Power Networks recognises that to achieve a high performing, customer centric and commercially sustainable business for the long-term, it will be critical to develop a workforce for the future, with diverse people who are ready and willing to embrace new capabilities. Targeted attraction, retention, workforce planning and development activities will create a future ready workforce that embraces new capabilities and technology. During 2021, to meet the challenges and capitalise on the opportunities of the rapid energy transition, SA Power Networks refreshed its People Strategy with key goals to:

- Drive towards an aligned and purposeful culture that is customer-centric, commercial, accountable and adaptable;
- Ensure its people are inspired and engaged; and
- Ensure its people are empowered and aligned with its purpose in order to consistently deliver high performance.

Testament to the work that the division's businesses have been doing to ensure they are retaining talent and creating great places to work, they have won a number of prestigious awards in 2021, including:

- Best Big Companies to Work For List 2022 – (UK Power Networks);
- Employer of the Year – Utility Week Awards 2021 (UK Power Networks);
- Ranked 10th in the Inclusive Top 50 UK Employers 2021/2022 list (UK Power Networks);
- No. 1 energy company in the Top Apprentice Employers list – The Job Crowd (UK Power Networks);
- Inspiring Employer of the Year 2021 – Inspiring Females Awards 2021 (Northumbrian Water);
- Great Place to Work 2020/21: Centre of Excellence for Wellbeing – Great Place to Work Institute (Northumbrian Water);
- Investors in People – Silver Accreditation (Wales & West Utilities); and
- Top Employer Award 2021 – Top Employers Institute (ista).

Learning and development

Employees across all levels benefit from structured development programmes with the understanding that quality training leads to improved results, productivity and engagement.

SA Power Networks has first-hand proof of how training and a rewarding workplace feeds directly into high levels of retention. More than 550 apprentices and 220 engineering graduates employed since 2003 are now in supervisory and leadership positions across the organisation, with another 105 apprentices in training. Over the past 20 years, the business has trained 575 electrical apprentices and it has retained almost all of them in the business (a 93% retention rate).

At Australian Gas Infrastructure Group, the Manager to Leader Programme is designed to equip employees with the skills, capacity and mindset to lead long-term, and deliver sustainable growth and transformation as focused, accountable and visible leaders. The programme has been designed to enable employees to understand the strategic context in which they operate and adapt their leadership to the needs of Australian Gas Infrastructure Group and its people. In addition, participants have the opportunity to focus on their personal leadership journey through a combination of one-on-one mentorship and workshops.

EDL has developed several leadership development programmes including the IGNITE programme for emerging leaders and the Breaking Ground programme, which is aimed at potential leaders within the Global Frontline leadership area to support them in developing key leadership skills.

With a focus on developing new talent and succession planning, Northumbrian Water currently has 37 employees studying for an apprenticeship qualification and over 105 employees studying for formal qualifications in areas such as water engineering and digital technicians to deepen their skillsets and expand their work horizons. The business also supported the UK Government's Kickstart Scheme, taking on 40 young people at risk of long-term unemployment and supporting them through a level 1 qualification in Occupational studies.

Northern Gas Networks is working with a number of education and training providers to develop training interventions with the primary aim of preparing its workforce for the future. This includes a focus on management development, an extensive programme and focus on colleague mental health and wellbeing and the transition from gas to alternative green solutions.

Putting customers first, Wales & West Utilities has created a skills-building development programme supporting effective stakeholder engagement, including building rapport, collaboration, communication skills and emotional intelligence to deliver better outcomes for its customers. This is alongside well-embedded induction and management development programmes which focus on supporting colleagues from "Hire to Retire" and training for both coaching and development which is rooted in neuroscience.

The Group also supports further education. UK Power Networks' Supported Studies programme has provided funding for professional qualifications, including electrical engineering and accounting to over 300 employees. United Energy and Victoria Power Networks provide education assistance for employees who are undertaking external study programmes, including MBAs, and other related degree programmes.



Teamwork at Victoria Power Networks

Inclusion and diversity

The Infrastructure businesses have been actively working to level the playing field of their traditionally male-dominated industries.

In late 2020, UK Rails signed up to the Railway Industry Association and Women in Rail's joint Equality, Diversity and Inclusion Charter. The Charter has seen over 100 organisations commit to working together to build a more balanced and higher performing sector. In its latest biennial employee engagement survey, 80% of employees thought UK Rails provides an inclusive work environment, however 20% were unsure how to respond to this question. In response, it commissioned an expert third party to conduct an anonymous survey and follow-on Let's Talk Inclusion workshop, which helped the business gather employee perspectives and examples of desired behaviours to support an inclusive environment. In addition, UK Rails offers benefits such as maternity, shared parental and adoption enhanced pay for 19 weeks, which are all above the legal minimum, as well as childcare vouchers.

During 2021, Northern Gas Networks has continued its focus on inclusion and belonging, developing a strategy and vision alongside objectives and colleague communities. Positive actions have included the option for colleagues to swap some of their bank holidays to days that would better allow them to celebrate festivals associated with their faith, blogs raising awareness about events in the LGBTQ+ calendar and a review of its policies with a focus on women's safety. All of these interventions resulted in a score improvement of 8% (specifically around inclusion) in the Business in the Community's Responsible Business Tracker evaluation.

Already with a balanced Executive Leadership Team, containing five females, including its CEO, and six males, Northumbrian Water has been working hard to increase female representation across its leadership, operational and technical areas. Through its Leadership Shine initiative, and supported by its executive leaders, they act as role models, investing time in mentoring and sharing learning to empower other women.

EDL has set a target of 25% female representation in its workforce by 2023. It is working to meet this goal, having achieved 23% by the end of 2021. One of the initiatives in support of this includes a policy to ensure all EDL primary caregivers on parental leave receive at least three months' full pay; EDL pays the gap between government entitlements (even if this is 0) and the employees' full salary for the period. EDL also rolled out online inclusion and diversity training globally, which will be refreshed every two years.

Diversity and inclusion should of course extend beyond just gender. To support social mobility, Northern Gas Networks committed to The Social Mobility Pledge, which champions organisations dedicated to levelling the playing field in the UK. With some of the country's widest opportunity gaps located within Northern Gas Networks' service area, the network has built on its many areas of best practice to develop an Opportunity Action Plan that will take its efforts to an even higher level of ambition. The Plan includes:

- A targeted approach to supporting local communities;
- Lowering barriers to apprenticeships for the most disadvantaged youth;
- Creating a new work experience standard; and
- Monitoring the impact of COVID-19 on communities and adapting the Plan as needed.

EDL has also established community partnerships in Australia and the UK, aimed at encouraging young people to take up careers in science, technology, engineering, and mathematics (STEM). Additionally, in Australia, EDL provided summer internships to participants from CareerSeekers and CareerTrackers, not-for-profit organisations that provide mentorship and support to migrant and Aboriginal and Torres Strait Islander university students as they embark on their future careers. In 2018, EDL extended its commitment to CareerTrackers by signing up as a 10-Year Partner. EDL's Australian business also completed the implementation of its first Reconciliation Action Plan, to improve opportunities for engagement and participation with First Nations people, and is developing its second plan.

As a result of AVR's efforts to match disadvantaged candidates to job positions within its organisation, as well as encourage its suppliers and contractors to do the same, it was recognised by the Social Entrepreneurship Performance Ladder in 2021.

A steadfast commitment to customers and communities

For the Infrastructure division, customers and communities are inherently intertwined where the businesses serve whole towns, cities and vast parts of countries through its essential services.

Resilient, efficient and affordable supply of services are of course top of mind, and the many accolades the businesses have achieved over the years are testament to this.

However, these businesses deliver value to customers and communities far beyond these benefits. They co-create their services and plans to fit the needs of customers and they build programmes that address the most vulnerable in society.

Proactive customer engagement

Delivering positive outcomes for customers, in the short and long-term, is at the core of how the Infrastructure businesses are run. They develop plans and improve services every day by listening, understanding and responding to customer needs and expectations.

Operating mostly in regulated sectors, a high level of customer engagement is required by regulators to protect customers that are not able to choose their service providers. However, the businesses individually go above and beyond these requirements to engaging in tailored ways to identify their stakeholders' wants and needs while maximising the value they add for customers.

Common engagement methods include meetings, workshops, online surveys, research, and in-depth interviews by phone and face-to-face. The businesses also test more innovative engagement methods to enable them to hear the views of uninformed stakeholders on complex subjects, tailoring engagement and taking professional advice to help get the best results.

Customer vulnerability and the just transition

Not everyone has the luxury of being able to afford energy and water. According to the latest UK government [statistics](#), 13.4% of households in England are living in fuel poverty. Supporting customers in need is therefore a priority for the division. The COVID-19 pandemic and recent energy crises have also hit disadvantaged communities the hardest, compounding deep-rooted socio-economic issues. It is also critical to ensure as the world transitions towards net-zero that it is done so in a just and fair manner and to think ahead to identify and address new forms of exclusion and inequality.



Northern Gas Networks team in the field with the local community

Northern Gas Networks' network area contains some of the poorest neighbourhoods in the UK, with customers having to cope with high levels of fuel poverty and low household income. To make sure it focuses resources where it can have greatest impact, over the past 12 months it has developed an online tool including a heat map of customers against vulnerability factors, such as air quality, fuel poverty levels, number of food banks and number of customers on the Priority Services Register. The business has also continued to support hard hit communities, by adapting existing services, and introducing new forms of support. For example, its Community Partnering Fund, which provides grants for grass roots projects, now has a "recovery from COVID-19" category, and has recently provided grants for schemes ranging from a community fridge project to funding a support centre which helps those in need to purchase essential household items. Its Warm Hubs model, which provides places for communities to come together, has been adapted for remote delivery, with slow cookers and energy advice packs distributed via food banks.

The move to a net-zero economy and the emergence of new technology is exciting but can present a risk of leaving financially vulnerable customers behind. Customers who are already in fuel poverty could be the last to take up new green technology and opportunities, unless interventions help to prevent this. Northern Gas Networks has worked with Newcastle University, Northumbrian Water and Northern Powergrid to collate research and data on fuel poverty, vulnerability and decarbonisation, to ensure fuel poor customers are not left behind. This work will provide insights that will inform the utility sector's approach to the roll out of green technologies and the transition to net-zero.

Cyber security

The Group seeks to protect its critical assets and data from cyber-attacks and ensures that there are adequate and effective cyber security defences to protect corporate information assets and critical infrastructure. While a Group-wide priority, that is guided by Group-wide policies, each business has its own tailored programmes and resources.

To illustrate, at SA Power Networks:

- SA Power Networks has made significant investments in the advancement of its cyber security maturity, aligning to the Australian Energy Sector Cyber Security Framework and as well as other well-recognised industry frameworks. This programme of work consists of multiple streams of work on both technical and management cyber security outcomes.
- Driving the cyber security response capability is the SA Power Networks cyber security threat profile. This outlines how SA Power Networks will most likely be attacked, what assets will be targeted and the techniques that will be used. Supporting this are automated threat simulations, where it tests its systems against known advanced attacks and identifies where it needs to better detect and prevent malicious activity.
- SA Power Networks' proactive and threat-led security operational capability is built around a hybrid model, with 24/7 monitoring and actioning of security alerts across the information technology and operational technology networks. This includes automated incident response processes to decrease time to respond. The team regularly participates in desktop simulation exercises to test scenarios and maintain levels of preparedness.
- A business-wide security awareness programme is in place focused on the business' unique cyber security threat profile. All new employees must complete awareness training upon joining, with annual refresher training for all employees. The programme is further supplemented with bi-monthly phishing drills that mimic real attacks, online training includes, business-wide briefings and face-to-face small training.

Together with the Innovation and Technology department, the IT Resilience team is enhancing readiness to respond to operational disruptions based on a recent review of the criticality of applications and sensitivity of information across SA Power Networks.



Beon Energy solar installation







3 Denmark store

TELECOMMUNICATIONS

SERVING SOCIETY

The Telecommunications division plays an essential role in society, connecting over 110 million people across the world, enabling people to work, learn, do their banking and shopping, and connect with their friends and families. Through these services, the division forms an integral part of the operations and services of businesses and governments around the world, acting as a driver of economic growth and human progress.

The importance of communications, has been highlighted by the COVID-19 pandemic, which saw a [20% surge in overall internet usage](#) , and accelerated digital transformation on average by [7 years](#) . It is now more important than ever that all people have the necessary skills and access to benefit from digitalisation and to ensure that no one is left behind.








While the Telecommunications division aims to be environmentally responsible in the way it manages its businesses and networks, there is also an opportunity for its technologies to play a key role in enabling GHG emissions reductions in society, thereby supporting the transition to a low-carbon economy.








The division's role in serving society is clear –
To build a sustainable, inclusive and thriving digital society.





Material topics, goals and progress

The following table highlights the material topics identified for the Telecommunications division, as well as the relevant UN Sustainable Development Goals ("SDG"), the division's goals, and progress made.

Material topics & SDGs	Goals	Highlights
Taking action on climate change  	<ul style="list-style-type: none"> Set science-based GHG emissions reduction targets to be validated by the Science Based Targets initiative. Calculate scope 3 emissions. Conduct a gap analysis against the recommendations set out in the TCFD framework. Report to the Carbon Disclosure Project ("CDP"). 	<ul style="list-style-type: none"> CK Hutchison Group Telecom committed to new science-based targets: <ul style="list-style-type: none"> Reduce scope 1 and 2 emissions by 50% by 2030, versus a 2020 baseline. Reduce scope 3 emissions by 42% by 2030, versus a 2020 baseline. Both targets are pending validation by the Science Based Targets initiative. Partnered with a third party to calculate scope 3 emissions across CKHGT for the first time as well as conduct a gap analysis against the TCFD recommendations. Reported to the CDP for the second time in 2020 and received a score of B-.
Creating a thriving digital future     	<ul style="list-style-type: none"> Deliver better connectivity, every day, for every customer. Invest in innovation and development of next generation networks. Identify and expand products and services which reduce GHG emissions and create other societal benefits. Help to ensure that all people, including disadvantaged groups, can access the benefits of the digital economy. Support people to study, work and access healthcare during the pandemic. 	<ul style="list-style-type: none"> Continued to make significant network investments in 5G, which will enable enhanced realisation of energy efficiency benefits. Expanded support for smart energy systems, for example continuing to support Ireland's leading energy utility ESB Networks with a multi-year smart meter rollout. 3 Ireland collaborated with ista to provide combined building energy management and connectivity services to support energy consumption reduction across major UK pub group. The division's dedicated data analytics business, CKDelta, partnered with UK Power Networks to support the smart energy transformation. Designed and installed a 5G Private Network at the Port of Felixstowe enabling remote-controlled connectivity of port vehicles, enhancing port efficiency and safety. Continued to extend the division's range of positive impact products and services across its markets.

Material topics & SDGs	Goals	Highlights
Delivering responsible products and services   	<ul style="list-style-type: none"> • Ensure best-in-class systems for data privacy and cyber security. • Help to ensure the safety and wellbeing of the division's customers as they use its products and services. 	<ul style="list-style-type: none"> • Maintained ongoing control systems to strengthen governance, risk management and compliance to minimise the risk of a data privacy breach. • Worked closely with leading industry bodies to mitigate latest security threats and support secure technologies. • Continuously evaluated emerging technologies, assessing risk and benefits and developing appropriate security policies and capabilities. • Offered a range of customer products to help support the digital safety and security of consumer and business customers, including Secure Web, Family Protect and Security Pro, 3Mobile Protect and Drei Internetschutz.
Creating a great place to work   	<ul style="list-style-type: none"> • Be an employer of choice, with employees that feel heard, engaged and supported. • Be a diverse business where employees feel they are included and belong; ensure conscious leadership; work in partnership with internal and external networks. 	<ul style="list-style-type: none"> • Continued to support and engage employees during the pandemic. • Focused on developing future-fit skills with learning and development programmes in digitalisation. • 3 Ireland and 3 UK implemented inclusive leadership training for people managers, a new introduction to diversity, inclusion and belonging module as part of the onboarding process, and developed new Inclusive Meetings Guidance. • WINDTRE incorporated gender diversity metrics into short-term and long-term incentives schemes. • Several businesses recognised by awards for leadership in inclusion and diversity.
	<p>SDG 17, "Partnerships for the goals", underpins action on all material topics and enables the best possible impacts through collaboration and working with relevant partners.</p>	

Taking action on climate change

The information and communications technology sector has a lifecycle carbon footprint equivalent to approximately [1.4% of total global CO₂ emissions](#) , and is responsible for around [4%](#) , of global electricity consumption. This includes the manufacturing and operation of fixed networks, mobile networks and data centres, as well as the manufacturing and use of devices. With the ongoing increase in the number of digitally-enabled businesses and consumers, and the rapid rise in use of data, this footprint is set to grow. In this context, it is imperative that the division sets and implements carbon reduction strategies as a core part of its technology roadmap such that it can meet the needs of customers in a sustainable way, now and into the future.

Climate governance

Action on climate change is driven through the division's Climate Action Working Group (CAWG) with representation from each of the businesses. This CAWG is working together on all aspects of climate governance and strategy including science-based target setting and GHG emissions reduction opportunities, with a focus on energy efficiency, renewable energy procurement opportunities and supply chain GHG emissions measurement and management.

In 2021, the CAWG worked with a third party expert to undertake a gap analysis of current practice against the recommendations

of the Taskforce on Climate-related Financial Disclosures ("TCFD") and identify next steps. In 2022, CK Hutchison Group Telecom ("CKHGT") will undertake a dedicated climate risk and opportunity assessment as well as conduct scenario analysis to understand and quantify the risks and uncertainties it may face under different hypothetical futures.

In progressing its GHG emissions reporting and disclosure journey, CKHGT reported to the Carbon Disclosure Project ("CDP"), receiving a grade of B-.

GHG emissions reduction targets

In 2021, CKHGT developed science-based GHG emissions reduction targets with the help of a third party expert including:

- Reduce scope 1 and 2 emissions by 50% by 2030, versus a 2020 baseline; and
- Reduce scope 3 emissions by 42% by 2030, versus a 2020 baseline.

These targets align with the sectoral decarbonisation approach for scope 1 and 2 emissions reduction, agreed between the information and communication technologies sector and the Science Based Targets initiative, and is consistent with a 1.5°C pathway. These targets are also pending validation by the Science Based Targets initiative during 2022.



CKHGT has also set a target to reach net-zero in operations (scope 1 and 2) by 2040. CKHGT will be working to incorporate scope 3 emissions also within this long-term ambition as well as seek validation by the Science Based Targets initiative.

CKHGT'S CARBON FOOTPRINT

During 2021, CKHGT calculated its scope 3 emissions for the first time and conducted an in-depth review of its scope 1 and 2 emissions to form its new 2020 baseline. The scope 3 emissions study revealed that 74% of its total value chain emissions relate to scope 3, with key contributors to this being purchased goods and services and capital goods.

CKHGT's indirect electricity emissions, or scope 2 emissions, are responsible for 25% of its total value chain emissions. Of this, networks contribute over 94%. Only 1% of its carbon footprint is attributable to its scope 1 emissions, which largely relates to refrigerants leakage and GHG emissions by its owned and operated fleet.

This carbon footprint exercise has revealed the following key opportunities:

- Creating energy efficiency in the division's networks and data centres;
- Increasing the proportion of renewable electricity procurement; and
- Engaging with supply chain partners to reduce the GHG emissions associated with the production and transportation of the goods and services procured.

Figure 33: Breakdown of scope 1, 2 and 3 emissions

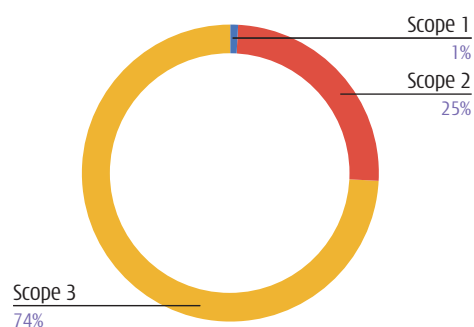


Figure 34: Breakdown of scope 2 emissions by emissions type

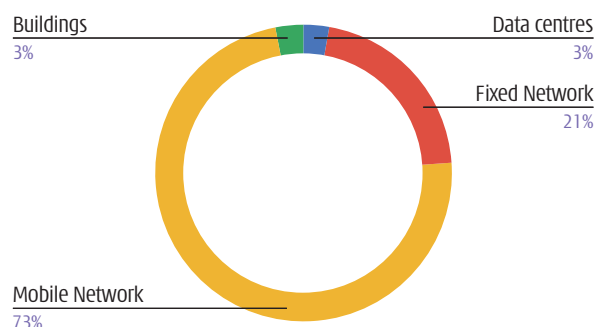
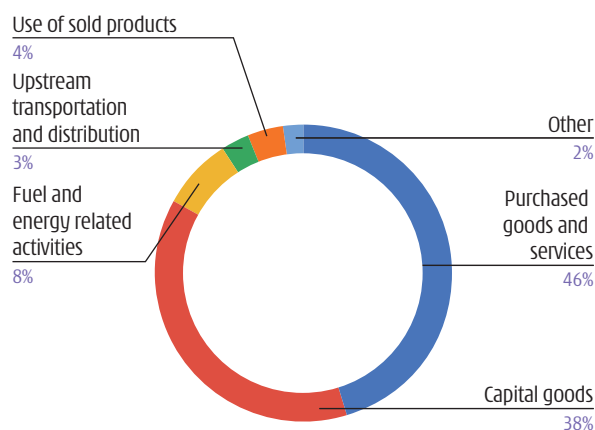


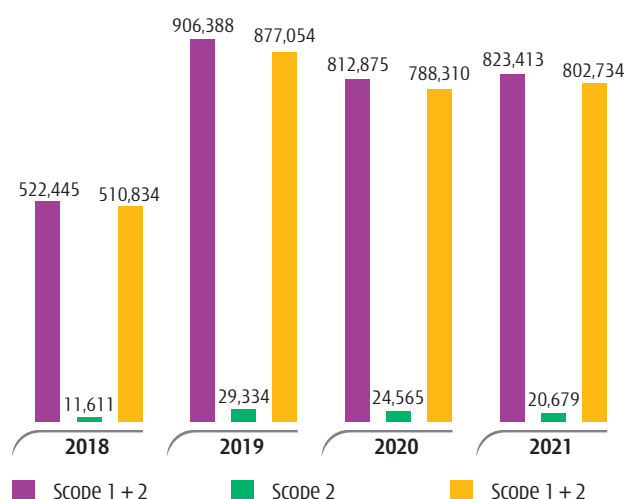
Figure 35: Scope 3 footprint by scope 3 category



GHG emissions performance

Due to an increase in traffic needs of the network during the pandemic with more people working and connecting from home, scope 1 and 2 emissions increased by 1.3% in 2021 versus 2020 but decreased by 9.2% versus 2019.

Figure 36: Scope 1 and 2 GHG emissions performance (tCO₂e)






Energy efficiency

Key measures being implemented widely across the businesses have included:

- Upgrades to more energy efficient 5G radio equipment, as well as upgrades to transmission networks, including virtualisation of core networks and network services, which support more energy efficient data processing;
- Consolidation of radio access network sites enabling the decommissioning of thousands of sites to optimise the service coverage and avoid unnecessary consumption and GHG emissions;
- Data centre cooling upgrades and energy saving adjustments;
- Procurement of renewable electricity;
- Installation of energy management systems and LED lighting, as well as moving into more energy efficient office premises; and
- Fleet replacement with electric vehicles.

5G AND ENERGY EFFICIENCY

The 5G technology rollout, and in particular where it is accompanied by the switch-off of legacy 2G and 3G networks, can be expected to achieve significant energy efficient benefits. The rollout of 5G drives operational energy efficiency in several ways:

- [5G is significantly more energy efficient](#) , at carrying data than earlier generations of technology, and particularly when deployed as 5G standalone (where 5G technology is used for both signalling and information transfer i.e. using 5G core rather than 4G core). The benefits are further realised where legacy technologies networks are switched off.
- 5G is the first fully virtualised network technology, which means that the core network is run as software (in the cloud) instead of hardware. As network functions move to the cloud, the physical infrastructure is used more efficiently. There is also significant potential to use machine learning and artificial intelligence for real-time operations management to optimise energy consumption of the radio network. Artificial intelligence is understood to reduce power consumption by up to [15%](#) , under current systems. Autonomous networks in the future may introduce even higher reductions.
- Along with 5G, there is an opportunity to deploy more energy-efficient equipment, such as a new generation of batteries and more efficient power amplifiers. Further savings can be achieved through the implementation of enhanced equipment cooling, such as free cooling, which utilises the cooler outside air temperature for cooling rather than traditional refrigeration.
- An essential part of the 5G infrastructure portfolio is the replacement of domestic copper cables with fibre. Fibre-To-The-Home is estimated to be [85%](#) , more energy efficiency than copper.



3 Hong Kong engineers testing a 5G radio base station on a rooftop

3 UK BREAAAM "EXCELLENT" HEADQUARTERS

In 2021, 3 UK relocated its original office premises in Reading and Maidenhead to new buildings in Green Park, Reading. The new office achieved a BREEAM New Construction (2014) rating of Excellent. The solar panel installation is expected to generate around 17,400kWh of renewable energy per year. The new office also has passive infra-red controlled LED lighting and electric vehicle charging points for staff and visitors. In addition to high thermal efficiency, the building includes an intelligent building management system controlling heating, ventilation and cooling.



3 UK's new office achieves BREEAM New Construction rating of excellent

Renewable electricity

Recognising the important role that renewable electricity plays in achieving its GHG emissions reduction targets, the businesses are either already using a significant proportion of renewable electricity or are actively monitoring and assessing opportunities to increase the share of renewable electricity in their energy supply.

Overall, renewable electricity comprises 26% of electricity consumption across the division. With 3 Ireland, 3 UK, 3 Sweden and 3 Austria purchasing between 80-100% renewable electricity.

3 Austria, WINDTRE, 3 Ireland and 3 UK further produce renewable energy through their own solar photovoltaic systems. WINDTRE has built 13 solar installations with a total annual production of approximately 350MWh per annum, and in 2021, 3 Ireland ran a remote mast site solar feasibility study which led to the installation of a further 10 sites during the year.

Sustainable transportation

In a number of markets, the businesses are moving to a lower carbon vehicle fleet. WINDTRE has a fleet of 8 electric or hybrid-electric cars, as well as a 60-vehicle car sharing programme, seven of which are electric and 21 are hybrid-electric. A further 17 charging points for electric or plug-in hybrid cars were installed at the Rome headquarters. 3 Sweden has also transitioned to using hybrid and electric vehicles and 3 Ireland recently ran a full car fleet tender including preferences for electric vehicles.

SUSTAINABLE LOGISTICS AT 3 AUSTRIA

3 Austria is committed to operating carbon-neutral, digital and plastic-free logistics. The business reuses inbound shipping cardboard boxes for onward distribution to retailers, with excess quantities collected, pressed and resold as recyclable material. It has also removed paper-based documentation for delivery notes, contracts and correspondence; its digital processes save over half a million pages of paper per year due to the elimination of delivery notes alone. Any electronic waste is resold to dealers via a certified disposal company. It further aims for plastic-free packaging through using filling material made from recycled paper or cardboard inlays, and folding cartons instead of using adhesive tape.

Creating a thriving digital future

A report produced by Deloitte and GeSI found that digital technologies could have a transformational impact on the world's ability to meet the 2030 Agenda and the SDGs, specifically finding that of the 169 SDG targets, 103 are directly influenced by digital technologies. According to the [Social Progress Imperative](#) , the world is on track to miss the 2030 due date in order to achieve the SDGs by over 60 years at the current rate of progress; mobile network-enabled transformation to accelerate positive change has never been more important.

The deployment of 5G connectivity that provides speed and capacity at fundamentally different levels will be increasingly central to progress against the SDGs. Digitalisation is expected to disrupt all parts of the economy over the next decade and, if sufficient policy and investment is received, has the potential to be a key driver of the low-carbon transition, among other priorities central to sustainable development.

Building next generation networks


Fifth generation or 5G, is the next generation in mobile technology, bringing super-fast data speeds, consistent connections and low latency. It offers enormous potential to make lives safer, smarter and more efficient, supporting innovative uses across sectors such as energy, transport, and manufacturing, amongst others.

Across the Telecommunications division, the businesses are investing significantly in 5G radio equipment, 5G distributed core, and backhaul, enabling customers to access the benefits of 5G. At the same time, they are supporting any customers with devices still reliant on 3G, to transition to 4G and 5G, by providing notice that 3G networks are nearing end of life and competitive offers for upgrade of devices where needed. 4G nevertheless remains important, utilising core spectrum available for data transmission, and compatible with millions of devices currently in use.




Following its 5G launch in 2020, 3 Ireland now has over 80% population coverage, bridging the digital divide across the country


Enabling the low-carbon transition

Transitioning to a low-carbon economy and reaching net-zero by 2050 will require the use of technology that can facilitate the rapid reduction in GHG emissions required to meet this goal. Mobile network-enabled technologies have a key role to play in this transition through increasing connectivity, improving efficiency and impacting behaviour change. While GHG emissions from the mobile sector account for approximately 0.4% of global GHG emissions, the level of avoided emissions enabled by mobile communications technologies is [10 times greater](#) .

The division recognises there is commercial potential in being the digital partner of choice and it is actively positioning its capabilities and offerings, particularly with respect to enabling the net-zero transition. The benefits of smart connectivity are realised when Internet of Things ("IoT") connectivity is deployed within a specific device or application, and often in combination with data analytics and artificial intelligence for smarter decision-making.

IoT connects objects and equipment such as industrial sensors, medical devices and vehicles, so that they can interact with one another, and can be remotely monitored and controlled. IoT enables significant efficiencies with enormous potential for benefits in safety, productivity, efficiency and environmental sustainability.

Already, there are more connected devices than people in the world, and it is predicted that by 2025, [27 billion devices](#)  will be capturing data on how people live, work, move through cities and operate and maintain the machines on which they depend.

A 2018 analysis of more than 640 IoT deployments, led by the World Economic Forum in collaboration with research firm IoT Analytics, showed that [84% of existing IoT deployments](#)  have the power to meaningfully advance the SDGs. In conjunction with artificial intelligence and analytics, IoT solutions offer even more powerful tools to make decisions which create better societal outcomes.

The division's investments in 4G and 5G connectivity are already enabling the deployment of IoT across a range of applications in its markets, including where businesses have implemented private networks. In addition, NarrowBand-IoT (NB-IoT) has been launched in Italy and Austria where businesses partner with IoT solution providers to provide connectivity across a range of applications including fleet management, healthcare and environmental monitoring.



IOT APPLICATIONS

Large-scale IoT connectivity can be used to optimise port operations at all levels. It can enable real-time monitoring of port equipment and machinery, container monitoring and tracking, vehicle movements, as well as issue detection and failure prevention.

Using a 5G Private Network designed and installed by 3 UK in 2021, Hutchison Ports' Port of Felixstowe, the UK's busiest container port, is trialling remote-controlled rubber-tyred gantry cranes that are used for container stacking and truck loading. In this use case, cranes are operated from remote-control centres which enables greater workforce flexibility and safety, and optimises fuel efficiency.

WINDTRE has partnered with Italgas, the leading gas distributor in Italy, to support the digitalisation of its entire gas network, leveraging WINDTRE's NB-IoT capability. The solution combines IoT SIMs with a private Access Point Name allowing for the secure transmission of network data to Italgas data centres, and a Cisco/Jasper service management platform. This has enabled Italgas to perform real-time monitoring of network operations, alarm management, big-data analysis and predictive maintenance. It also allows for remote reading of gas consumption thereby avoiding the need for Italgas service personnel to travel around the network, creating operational efficiencies and reducing the use of fuel use for transportation.



Hutchison Ports Port of Felixstowe

Large-scale IoT connectivity can be used to optimise port operations at all levels

Energy management

IoT can be used to enable energy management across different stages of the electricity supply network, from power generation to the end-point consumers. The ability to monitor the energy consumption of assets, be they heavy machinery or household devices, enables better forecasting and reduced energy wastage. On the supply side, sensor-enabled assets enable optimisation of asset maintenance, integration of renewable energy and reduced waste by predicting energy peaks.

The division partners with utilities companies to provide SIM cards for utility meters in residential and commercial properties, enabling real-time remote monitoring of consumption. In just Italy and Ireland alone, the division has over four million SIM cards in utility meters, helping customers to actively monitor their consumption of electricity, gas and water.

The division also collaborates with energy specialists offering energy management solutions, enabling customers to take control of their energy usage and identify opportunities for reduced consumption. One such collaboration is with energy solutions specialist ista, one of the Group's Infrastructure companies.

AUTOMATING METER READINGS WITH ESB NETWORKS IN IRELAND

3 Ireland is the provider of managed IoT connectivity to Ireland's leading energy utility, ESB Networks. ESB Networks uses 3 Ireland SIMs embedded in smart meters which measure the energy consumption of individual customers at half hourly intervals, with data transmitted over a private Access Point Name provided by 3 Ireland, offering a secure end-to-end data connection. In 2021, 3 Ireland continued to support ESB Networks with the rollout of this transformational project, providing SIMs to support the installation of 40,000 smart meters per month.

BUILDING MANAGEMENT SYSTEMS

CK Hutchison Innovation Opportunities Development ("CKH IOD") is dedicated to promoting innovation and collaboration across the telecommunications and other Group businesses. CKH IOD is partnering with ista, to drive the uptake of energy solutions combined with connectivity provided by the Telecommunications division across the wider Group.

Working with CKH IOD, 3 Ireland partnered with ista to provide IoT connectivity as part of a building energy management system solution for a well-known UK pub group. This system offers a simple low-cost control platform, allowing remote monitoring and control of key aspects of the site's energy consumption. ista manages a portfolio of systems across its client's sites with a particular focus on the hospitality and retail sectors, and with installations demonstrating a 10-20% reduction in site energy use.



Asset tracking and fleet management

Another important application of IoT in the sustainability context is use for asset tracking and the benefits to GHG emissions reduction. To illustrate, on-board telematics can create fuel savings through optimised routing and reduced idling times for freight and logistics. Research from the GSMA indicates that, of the 4.4 gigatonnes GHG emissions that need to be reduced by the transport sector by 2030,

32% [of this can be met through connectivity supporting routing and fleet management in shipping and heavy goods vehicles.](#)

The division therefore considers logistics and fleet management to be an important area of focus as it aims to grow its sustainable products and services portfolio.

ASSET TRACKING SOLUTIONS

3Locate is 3 Ireland's asset management solution that enables companies to monitor both powered and non-powered assets. It can be used in a range of settings such as maximising the efficiency of onsite plant and machinery, delivery trucks or other fleet transportation. Insights using 3Locate can be used to reduce idling time and vehicle movements, driving efficiency and reducing fuel consumption.

Using vehicles and fleets smarter can lead to typical savings of between 20-30%. Transport and logistics companies using the technology have saved on fuel costs by reducing idling time by up to eight hours per heavy goods vehicle per week.

The solution can also be combined with dashcams and driver behaviour analytics, helping to improve driver safety while enabling lower costs of insurance.

Electric vehicle infrastructure

With the governments regionally committing to banning the sale of internal combustion engines, the need for a rapid rollout of electric vehicle infrastructure is crucial. The businesses are developing data driven insights to support the transformation taking place across the mobility and energy sectors working to help the various actors involved in such a complex rollout including power distributors, charge point operators, urban planners, and payment solutions providers.

ENABLING THE ELECTRIC VEHICLE TRANSFORMATION

CKDelta is the Group's dedicated data analytics business. It specialises in designing and testing innovative solutions for business, using diverse and unparalleled data sets from across the Group and other partners.

In 2030, the UK is set to enact a ban on the sale of new petrol, diesel, and hybrid vehicles with 91% of new car sales expected to be electric vehicles. The transformation required presents a number of challenges to those within the energy and mobility sectors. Firstly, distribution network operators will need to reinforce their networks as demand from consumers for electricity increases, and will need to routinely monitor fluctuations in pressure on the grid. Secondly, charge points will need to be installed in the right locations for economic viability in the long-term and to ensure that no one is at a disadvantage in accessing electric vehicle charging. In addition, charge point operators will need to build an

understanding of the commercial viability of their investments, and will need to manage and adapt their network of charge points economically on an ongoing basis.

CKDelta is providing data-driven insights to help address these challenges and to make this transition a reality. Working with UK Power Networks, it is applying advanced data capabilities and machine learning to simulate the behaviour of the network at scale for accurate estimation of changing network load profiles.

CKDelta is also partnering with ista to develop a suite of tools that enable data-driven insights for planning the installation of electric vehicle charging points in commercial properties. The approach combines data from multiple sources such as rich demographic data, meter data and mobility data to enable prioritisation of locations for optimum, carbon impact and return on investment.

CKDelta is providing data-driven insights to help address the challenges of the electric vehicle transition



3 Austria cell site towers



DATA INSIGHTS FOR TRANSPORT PLANNING

3 Denmark and **3** Austria are leveraging the combined power of data and connectivity to provide insights in support of more efficient transport network planning.

Data insights is a growing new business area for **3** Denmark which is focused on providing valuable tools and intellectual property for mapping and analysing mobility data. By looking at population travel and movement patterns, businesses and society can gain valuable insights on how to optimise public transport, where to place electric vehicle infrastructure or how to distribute energy and electricity in the most efficient way. Mobility data is aggregated and anonymised, providing insights on device movement patterns in aggregate.

In June 2021, the Danish State Railway entered into an agreement with **3** Denmark to obtain anonymised mobility insights for a better understanding of Danish transport needs to enable reductions in road traffic and associated GHG emissions, among other objectives.

Similarly, **3** Austria is providing major public transport provider, Salzburger Verkehrsverbund, with motion insights in a three-year project aimed at optimising network planning and scheduling to encourage greater use of public transport thereby reducing road traffic and GHG emissions.

Network resilience

The Telecommunications division's goal is to deliver better connectivity, every day, for every customer. Network resiliency serves as a fundamental social responsibility – to ensure that customers are able to connect securely, communicate, access data and share information anytime, anywhere.

5G networks will be required to adapt during extreme weather events, and increasingly so in the face of climate change. Resiliency is enabled by efficient radio equipment that in the future can be powered by micro grids and renewable energy. The resiliency of cell site towers against damage caused by extreme weather events has been a priority focus area for the division's crisis management teams, in addition to rolling out innovative technology solutions such as "network in a box" that can deploy a complete network rapidly enabled by technology features such as self-backhauling, and potentially satellite backhauling. In this regard, the division continues to use a range of network technologies optimised for local weather systems, from metropolitan and rural Asia, to the northern European extremes of Sweden.

The Telecommunications division is exploring the recent advances in the satellite industry to provide impromptu backup to its terrestrial networks in the event of extreme weather or other significant disruptions.

Supporting innovation in 5G and sustainability

Across markets, the division is actively supporting innovation in 5G and IoT applications, in many cases with a focus on creating sustainable, positive impact. For example, **3** Sweden held its inaugural and highly successful 5G Sustainability Awards.



3 Sweden held its inaugural 5G Sustainability Awards

3 SWEDEN'S 5G SUSTAINABILITY AWARDS

3 Sweden launched the 5G Sustainability Awards in September 2021 to support 5G innovation that contributes to positive societal and environmental impacts. The competition received 40 nominations with ideas including using artificial intelligence for heart, breathing and circulation monitoring and "refill robots" to reduce disposable packaging.

The winners were selected by a jury of experts in technology, innovation, sustainability and entrepreneurship. The first place was awarded to Buddywise which seeks to address the global problem of thousands of people dying every day in workplace incidents. The technology uses 5G and a combination of artificial intelligence and smart cameras to help detect and warn of potential occupational safety hazards in the workplace. Buddywise was awarded SEK 100,000 of start-up capital, as well as access to coaching and office space provided by 3 Sweden and an invitation to the Three Business Talkshow, which showcases entrepreneurs and discusses topical issues for business. Second place, and a SEK 50,000 prize,



Buddywise won first place in 3 Sweden's 5G Sustainability Award

went to Consenz to help develop its idea of using 5G to connect car fleets for safer and greener mobility in smart cities. Bronze, with a SEK 25,000 prize, was awarded to Dronest for its 5G-connected drones that are intended to be first responders on accident sites and emergencies.

3 Hong Kong, through leveraging territory-wide 5G coverage, is able to offer a host of innovative new solutions. For example, smart robots have been deployed in shopping malls to perform dual concierge and security guard roles, providing shoppers with customer service support during the day while also guarding the facilities by capturing and reporting security breaches.

In 2021, the Hong Kong business launched dedicated 5G business services for companies in the construction, shopping mall management and performing arts sectors and supported a number of customers to apply for the government's Subsidy Scheme for Encouraging Early Deployment of 5G.

3 Hong Kong was recognised for its ongoing investment in innovative 5G solutions, winning numerous awards for innovation in the "International Business Awards of the Stevie Awards". This included a silver award in the "New Products and Product Management Awards-Business-to-Business Products" category for its 5G Contactless Car Park Solution, and a gold award in the "New Product and Product Management Awards - Virtual Event Technology Solution" category for its 5G 4K Live Broadcasting Solution.

WINDTRE's commitment to investing in 5G and innovation is demonstrated through its 2030 goal to be the "smart partner of 100 smart cities". In 2021 it began a number of activities in support of this goal, including:

- A digital services maturity analysis of cities to define priority areas;



- Initial contact with local public administration; and
- Enhancing its Smart City Service Catalogue to include systems for the management of artistic and cultural heritage, public safety and emergency management, energy efficiency, air quality and waste management, and smart mobility solutions focused on enhancing efficiency and safety.



Live concert streamed from the Tsz Shan Monastery via 5G by 3 Hong Kong

WINDTRE renewed its partnership with ZTE to test innovative solutions through the ZTE Innovation & Research Center in L'Aquila, with particular focus on the activities in the areas of 5G and IoT and specific focus on smart city services.

Positive impact products and services

Consumers are becoming increasingly aware of the environmental and social impacts of the products they buy, and their expectations are changing as they seek to make choices that align with their values. Research published by Deloitte in 2021 found that nearly [one in three consumers](#)  claim to have stopped purchasing certain brands or products due to ethical or sustainability-related concerns, and for Gen Z this increases to [45%](#) .

Recognising both the division's role in enabling more sustainable outcomes as well as the rise of the conscious consumer, the division is focused on creating products and services for positive impact across all of its markets.



For example:

- **3** Austria continued to scale its e-health services, Doctors Online, in partnership with Generali insurance and Instahelp, which offers online, face-to-face professional mental health support. **3** Austria also offers Eloop, an electric car sharing service, and Drei Energie, a carbon neutral electricity and gas offering for Austrian customers.
- **3** Denmark is working with the Danish Ministry of Defence on a national public warning system, in line with requirements under the European Electronic Communications Code. This cell broadcast system will send out a push SMS both nationally and regionally to warn the public of danger, such as in the case of natural disasters, local fires and gas leaks.
- **3** UK has been piloting a scheme with five police forces across England and Wales, providing replacement SIMs and loan devices free of charge to victims of rape whose devices have been taken into police custody as part of the investigation so they are not without a device which may cut them off from their support network.



- WINDTRE has partnered with WWF in its GenerAction Sea programme, protecting the Mediterranean Sea and the Italian shoreline. Customers subscribing to the "solidarity option" donate EUR50c every month which is matched by WINDTRE in order to help protect the marine environment including species at greatest risk, like the Loggerhead Sea Turtle.

Responsible and circular devices and accessories

Consumers on average replace their smartphones [every 33 months](#) . With approximately 1.4 billion phones being sold annually and only 20% being recycled, that creates substantial hazardous waste among other environmental impacts. Further, analysis has shown that [75%](#)  of the lifecycle carbon footprint of a mobile device lies within the production stage, making it important for device manufacturers and retailers to identify ways to increase device longevity.

Across the division, the businesses are identifying opportunities to reduce the use of resources associated with products and packaging, and to extend the life of products through take-back arrangements and refurbished product offerings, thereby reducing the environmental impacts across the product lifecycle.

Extending product life and circularity

The division has trade-in and device buy-back schemes across its markets with specific examples of how these programmes work including:

- **3** Denmark has a take-back programme offered in partnership with a company that refurbishes used devices. Under the scheme, customers can trade in their old device with a price reduction on a new device. In 2021, 89% of traded-in devices were reused, while the remaining 11% were recycled.
- **3** Sweden's take-back programme enables customers to return their used devices by free return post, which are then cleared of data and refurbished to be on-sold as second-hand phones. By using the take-back programme customers are given discounts on their subscriptions or can choose to donate the cost to the Swedish Childhood Cancer foundation.
- **3** Austria is trialling a programme to offer customers refurbished handsets, smart watches and tablets professionally remanufactured by certified partner, Renewed, and provided with a 24-month warranty. At the end of 2021, **3** Austria launched an incentive programme for customers that voluntarily postpone their contractual handset replacement by six months, aiming to further conserve resources and extend the product's life.

PHONE CASE RECYCLING IN HONG KONG

Every year, millions of mobile phones are produced and sold. Unlike mobile phones, phone cases are generally made from plastic with no resale value. Every year more than one billion mobile phone cases end up in landfill. In 2021, 3 Hong Kong collaborated with CASETiFY to recycle used phone cases and incentivised customers with a promotional discount.



FAIRPHONE

3 Denmark is proud to be offering Fairphone to Danish customers. As the name suggests, Fairphone's mission is to build a fairer world by putting people and planet first and driving conversations about what "fair" really means.

Amsterdam-based Fairphone originally began as an awareness campaign on conflict minerals and turned into a phone company in 2013, with the aim to source as many materials as possible in both humane and environmentally responsible ways.

Fairphone's aims now go beyond responsible sourcing to also address the circular economy with its durable, modular and repairable design allowing for easy modification, update and repair. It is also the only phone on the market that comes with a 10/10 score iFixit ranking—a ranking that scores smart phones based on their ease of reparability.



Sustainable SIMs

The division is pursuing a number of sustainable SIM solutions.

The use of e-SIMs enable the delivery of a digital profile to a chip on the device, rather than supplying a physical SIM card giving more flexibility and choice to customers for the types of services

they subscribe to while reducing plastic and electronic waste. Throughout 2021, the division scaled its e-SIM platform to more operating countries, while continuing to work with the ecosystem of device vendors to bring more e-SIM enabled devices to market.




During 2021, it continued its programme to replace the standard credit card sized SIM holder with a new half-sized format cutting plastic waste in half.

Sustainable accessories


Developing more sustainable accessories and packaging has also become a more recent focus. **3** UK, **3** Ireland, **3** Denmark and **3** Sweden launched a range of more sustainable mobile accessories with the Danish brand dbramante1928. **3** UK and **3** Denmark also launched 100% plant-based and compostable phone cases made by A Good Company. In 2021, **3** Denmark launched a new accessory brand, Utility Project, and ensured the packaging is plastic-free and certified by the Forest Stewardship Council.



Digital inclusion

The pandemic has seen digital transformation across society leap forward on average by [seven years](#) , with more businesses and Government services integrating digital technologies into their business models and customer service. A [2020 study](#)  by McKinsey showed that companies have accelerated the digitalisation of products, services and customer interactions by [20 percentage points](#) , exceeding 50% for the first time ever.

People have been through extended periods where physical contact and movement has been limited to control COVID-19, making them ever more reliant on digital technologies to access support, to work or learn, to buy essential goods, and to connect with social networks. This has made it more important than ever to reduce the digital divide and enable more people to access the benefits of digital technologies.

Digital exclusion may occur for multiple reasons including lack of access to telecommunications networks or devices, or lack of digital skills. Research has shown that about [37% of the world's population](#) , or 2.9 billion people, are still offline and excluded

from the direct benefits of the global digital economy. Groups with higher levels of digital exclusion tend to include older generations, people with disabilities, and lower socioeconomic groups.

Supporting the elderly and those with disabilities

In support of its goal to have seniors 100% connected by 2025, WINDTRE has partnered with AnyTech365, an IT security and support company, to offer all WINDTRE customers over 60 years' of age access to telephone support to set up their new smart phone. It has also published video tutorials on its website to help older people to carry out day-to-day digital activities such as sending a WhatsApp text or video call, or ordering groceries for delivery.

3 Hong Kong also maintained a focus on digital inclusion for the elderly. The year 2021 marked the 11th anniversary of the Group's Lo-Yau-Kee Monthly Service Plans Sponsorship whereby senior citizens from various charitable organisations benefit from this waiver-of-service-fee scheme. **3** Hong Kong also supported the Jockey Club Digital Support Project for the Elderly by providing smartphones, together with 12-month free basic mobile service. User training was also provided to help the beneficiaries learn the practical skills of using smartphones and mobile applications.

In 2021, **3** Austria has partnered with Mosaik, a non-profit organisation focused on providing care, counselling and support to people with disabilities. Through donations and other support, **3** Austria helped enhance the access of Mosaik clients to digital health, communication and other multi-media resources.



3 Hong Kong supports Jockey Club Digital Support Project

Rural access

Recognising the challenges of connectivity and digital exclusion in some of Italy's rural areas, WINDTRE has committed to bring fast connection and smart technologies to 100 Italian internal villages. In addition to improving connectivity and offering free Wi-Fi services, the project also includes holding dedicated digital education events.

3 UK is working with the UK Government and several other mobile operators on the Shared Rural Network, a GBP1 billion programme aiming to collectively bring guaranteed coverage to 280,000 additional premises and an additional 16,000 kilometres of roads in rural areas across the UK. Once completed, 95% of the UK will have reliable 4G coverage by at least one mobile operator. **3** UK has committed to reach 90% geographic coverage by 31 January, 2027.

3 UK also partnered with CCS Insight, a technology market intelligence and advisory firm, on research to better understand the potential for Fixed Wireless Access (FWA), i.e. superfast 5G broadband. The research looks at its potential to be a cost effective, quicker, and more environmentally responsible approach, given

that it avoids the need for extensive laying of fibre to connect rural areas. Currently, only 20% of rural areas are able to access ultrafast Wi-Fi, with four in five people waiting on fibre to be laid. The research calculated that FWA could be installed for half the cost of full fibre while still providing a comparable level of connectivity.

3 UK also identified a number of policy reforms that would be vital to enabling more FWA deployment.

3 Ireland is committed to enhancing connectivity for its customers. Indeed, **3** Ireland was the first mobile operator in Ireland to bring 5G to every county, providing superfast broadband to remote areas in Ireland.

3 Ireland has been working with the Arranmore Business Council to provide connectivity to the island of Arranmore, Ireland and in doing so supporting societal and economic development. This connectivity, combined with other facility improvements and the move to remote working more generally, has helped to reverse the island's century-long economic decline, with its population now growing, and new businesses opening preserving a unique way of life for generations to come.



Island of Arranmore, Ireland

Small businesses

The division is also working to support small businesses in accessing the benefits of digital transformation.

Through **3** Austria's "Drei Digitalimpuls" initiative, it aims to impact the digital capability gap between large and small businesses, which has been widened further by the impact of COVID-19. The initiative includes free "digital checks" for companies as well as training and other education opportunities throughout Austria. It also participated in the government initiative Digital Team Austria, through which it provided several thousand companies with high-performance, free Internet access during the pandemic.

Small and medium-sized enterprises are crucial to Ireland's economy, with 99.8% of private businesses having fewer than 250 employees, employing over 1 million people. **3** Ireland supports small businesses, with a variety of services such as WAN connectivity, Unified Communications and security solutions.

In 2021, **3** Ireland launched its **3** Grants for Small Businesses programme. The programme, managed by the small business network and support provider, Enterprise Nation, supported 10 small businesses with a EUR100,000 award made up of funding, advice, support and connectivity solutions from **3** Ireland's expert business advisers. Shortlisted applicants were required to present a virtual pitch setting out how the grant would help the business, and what the positive impact on their community would be.

Supporting society through the pandemic

The COVID-19 pandemic has fundamentally changed the way society interacts as measures have been put in place globally to reduce physical contact and to slow the spread of the virus. In 2021, the division continued to focus on ways to help customers stay connected during lockdown, and to ensure that customers remained as safe as possible when coming in-store as these were permitted to reopen in some locations.

Supporting access to health advice and care

Across the division, businesses continued to offer customers free data access and calls to healthcare support websites and hotlines. For example, **3** UK zero-rated access to the NHS website and 111 non-emergency helpline along with the dedicated NHS Test & Trace 119 helpline. Working with the Ministry of Justice, **3** UK allowed free access to several victim support and domestic abuse support services. **3** Ireland zero-rated health and educational websites provided by Irish government for customers. WINDTRE also continued to enable free access to Senior Italia FederAnziani, assisting its senior customers to access professional, psychological support at no cost. **3** Ireland also donated phones and SIMs providing free calls, texts and data to charities, nursing homes and hospitals.

3 IRELAND-SUPPORTING MENTAL HEALTH CHARITY DURING COVID-19

The support line of mental health charity Aware, is an important source of help for those in Ireland impacted by depression, bipolar disorder, among other mood-related conditions, and more recently, anxiety caused by the impact of the pandemic.

When COVID-19 forced offices to close, Aware needed a way to enable its 115 trained volunteers to take calls securely while volunteering from home. **3** Ireland worked swiftly with Aware to train, test and pilot 3Connect, an encrypted and anonymous, cloud-based telephony service, protecting the privacy of callers and volunteers. 3Connect routes calls over the internet via an app and automatically diverts calls to the volunteers who are logged into the app for their shift. The app was live within three days, with volunteers taking calls from home no matter where they were based.

"From March to July, we answered 68% more calls than during the same period in 2019, with significant peaks in April, May and July of over 80%. Thanks to the implementation of 3Connect, we were able to answer almost 15,000 calls in an 18-week period, providing information, understanding and support when people needed it most."

- Maria Walsh Healy, Support Line Manager with Aware

Supporting access to education

3 Ireland launched the Data for Schools programme, providing 15,000 free SIM cards with unlimited data to schools across the country for distribution to families and students to help with home-schooling and connectivity during lockdown. WINDTRE extended its EduTime initiative, helping under-25 customers to study remotely with 50GB of data at no cost. During the third lockdown, **3** UK removed upfront costs on all 4G+ MiFi devices across all contract lengths, and discounted accessories for a limited period at the start of the lockdown. It also worked with the UK Government's Oak National Academy to zero-rate access to its online classroom and resource hub.

The division's support included a particular focus on helping disadvantaged or vulnerable families to access home learning. In January 2021, **3** UK partnered with the UK's Department for Education's Get Help with Technology programme, to provide the most disadvantaged children across England with unlimited data allowing them to continue with their education online until the end of the school year.



Free internet donation to schools

Post-pandemic recovery

Looking ahead, the Telecommunications businesses collectively have an important role to play in the post-pandemic economic growth and recovery. WINDTRE has been exploring this range of potential through a number of studies, publishing several reports during the year, including:

- "The value of connectivity in post-Covid-19 Italy" in collaboration with the Centro Studi Investimenti Sociali (CENSIS) and presented at the Luiss Business School in Rome;
- "The value of the telecommunications sector for the country system", prepared in partnership with the European House, Ambrosetti; and
- "The telecommunications sector in Italy: regulatory framework and impact analysis", in collaboration with the Luiss Business School of Rome.

These reports highlighted a range of insights and recommendations relating to network development needs and digital inclusion, which are making an important contribution to local discourse.



Delivering responsible products and services

The division has a responsibility to play an active role in protecting customers from the risks and potential harm where telecommunications services are misused or abused. This includes working to protect the privacy of customer data, maintaining the highest level of cyber-security standards, taking action to help reduce scams and identity theft, and supporting customers in their digital safety as they use the products and services provided by the division's businesses.

Data privacy

The right to privacy is recognised in the Universal Declaration of Human Rights as a fundamental human right. This has been extended to recognise the right to data privacy in many jurisdictions throughout the world. Protecting the data entrusted by customers and employees is therefore of the highest priority to the division. Failure to maintain a rigorous approach to data privacy can have significant impact on reputation as well as direct financial consequences.

Data protection laws throughout the world continue to emerge and evolve, and compliance with these laws is guided by country-specific privacy policies with advice and guidance on operations provided by locally appointed Data Protection Officers. The EU General Data Protection Regulation is considered to be the highest standard of data protection legislation and compliance and standards to uphold this regulation are embedded in operations and processes throughout the division. Mandatory training is provided to all European employees, including new starter induction as well as on-the-job refresher training. Further, specific training has been developed for sales support staff and system administrators.

Country-specific Privacy Notices have been developed and adapted to local regulatory requirements. These are available on country-level websites in local languages, with clear information on the collection, use, sharing, retention and deletion of personal data including data transferred to third parties (in addition to opt-outs). Contact details are provided for data subjects to raise concerns about data privacy and to exercise their rights under data protection legislation.

Entrusting the personal data of customers and employees to third party vendors for data processing services requires adequate data protection from a technical and organisational point of view and minimum-security requirements are required from all vendors as part of contractual due diligence. These requirements relate to:

- General security in terms of physical security, access policies, software, hardware and cloud resources protection;
- Security controls focusing on the protection of data;
- Applicable privacy law; and
- A list of internationally-verified certifications, standards and frameworks.

These requirements are supplemented with many other compliance requirements in line with country-specific data privacy laws. Third parties must also undergo rigorous assessments where appropriate and adhere to the terms and conditions in data processing agreements. Further in-depth inspections are carried out for selected third parties.

The division continues to adopt new control systems to strengthen governance, risk management and compliance to minimise the risk of regulatory action being taken for non-compliance with data privacy legislation. For example, WINDTRE has adopted a Governance, Risk Management and Compliance system that allows it to monitor the entire data processing chain, as well as

to analytically assess the level of compliance of each system involved. In 2021, WINDTRE invested approximately EUR18 million in services and platforms for data and system security.

Reflecting the highest standards that the business applies to maintaining data privacy, in March 2021, 3 Hong Kong was awarded a Gold Certificate at the "Privacy Friendly Awards of the Office of the Privacy Commissioner for Personal Data, Hong Kong".

As the rate of technological development continues at speed, new legislation on data protection has developed globally, and in the last year, new laws modelled on the GDPR have emerged in China, Vietnam and India, which impact indirectly on the Telecommunications division when contracting with entities operating in those territories. The transfer of personal data from the EU to non-EEA countries without adequate standards of protection for that data continues to be scrutinised by both regulators and the courts. The division is monitoring developments in this area to ensure that the transfer of data is in compliance with appropriate transfer mechanisms.

Cyber security

The division's cyber security measures protect the confidentiality, integrity and availability of systems and information. This is an issue of significant public concern as critical infrastructure increasingly moves onto digital platforms across all the division's operating markets, with potential vulnerability to cyber-attacks and the consequences of data breaches.

To meet these challenges, the division coordinates cyber security efforts across its telecommunications businesses, and collaborates with wider industry bodies such as the GSMA and ETSI so that it can counteract and mitigate the latest security threats in both IT and mobile networks.



The division has adopted international standards and frameworks such as ISO 27001 and the NIST Cyber Security Framework to ensure that systems are as secure and resilient as possible, and to ensure compliance with all applicable laws. Principles contained within these international frameworks are translated into risk-based operational practices, where security is a key consideration in the design, implementation, running and decommissioning of systems; a method that has been applied in digital transformation projects at the largest businesses. Security risk assessment, vulnerability assessments and minimum control standard checking processes for new products and services are carried out regularly.

People factors are crucial in raising cyber security awareness and maintaining vigilance. The division therefore holds regular online training for both employees and contractors, to boost staff security awareness, especially on aspects relating to social engineering, phishing and ransomware attacks. Instructor-led sessions are also held for high-risk functions to reinforce best practice and identify any areas of concern.

External consultants are engaged regularly to conduct ethical hacking against the division's networks. These exercises probe not only the IT aspects, but also the people aspects, for example by sending phishing emails to gauge staff responses, tailgating employees to gain access to office areas, and attempting to plant monitoring devices into the company's networks or IT infrastructure.

The division is continuously evaluating emerging technologies to assess relative risks and benefits and developing appropriate security policies and technical capabilities. As with most new technologies, the current set of emerging technologies such as pervasive IoT, automation, artificial intelligence and quantum computing potentially introduce new threats that need to be addressed. In many of these areas, research and standardisation efforts are underway to mitigate the risks. For example, the development of artificial intelligence-based and cognitive cyber security will be required to avoid artificial intelligence threats, and the achievement of autonomous self-adaptive and self-preserving networks will require the adoption of privacy-aware networks, zero-trust architectures and cyber-resiliency approaches. Similarly, the transition to quantum-resistant cryptography will be needed to protect against potential quantum attacks.

Reducing scams and identify theft

Scams are known to be a significant and growing problem worldwide. In the UK, for example, reports to Action Fraud, the fraud and cybercrime reporting centre for England, Wales and Northern Ireland, were up 33% during the 12 months to March 2021 as compared to the prior year, with victims losing GBP2.3 billion. Of all fraud types, phone fraud saw the biggest year-on-year increase, up 87%.

During 2021, 3 UK deployed additional technology that has enabled it to successfully filter and block inbound spam and fraudulent SMS traffic on its network. As a result, it saw a year-on-year increase of 33% in blocked SMS messages since 2020, with millions more prevented from reaching customers. Despite a rise in scam messages, since April 2021, the efforts of 3 UK have seen up to 5.8 million messages blocked per month, with that rising to 14 million during some of bigger attacks, such as "Flu bot".

There are several tools available for the businesses to combat fraud, and also to support other companies. Where local data-sharing arrangements allow, the Subscriber Intelligence application is able to provide data that enables stronger customer identification processes and hence prevent fraud. 3 Austria has implemented two Application Programme Interfaces (APIs) to support secure data transfer and customer identification.

Digital safety and wellbeing

As the digital world has grown, so too has the misuse of the internet. Risks and issues faced by customers include security of personal data and information as they use their devices, potential exposure to offensive or abusive content, the threat of cyber-bullying, as well as the mental health impacts of social media use. The division has a responsibility to play its part in protecting customers using the controls that it has available, as well as to support customers in using the internet as safely as possible.

Across the division, the businesses are launching products and services for consumer and business customers to help to protect their online safety and security.

For example, WINDTRE has launched a number of products. This includes Secure Web, a cyber security service addressing the particular needs of SMEs, and offering customers protection from attacks and malicious agents. WINDTRE also offers Family Protect and Security Pro, a suite of apps dedicated to navigating the web safely, protecting the whole family on both fixed line and mobile devices.

In partnership with award-winning cyber security company Corrata, 3 Ireland offers a business mobile security solution, 3Mobile Protect, that protects mobile devices from phishing and malware and prevents data loss on company smartphones and tablets. This responds to the increasing number of mobile phishing attacks occurring outside of email, and the importance of raising standards of mobile security, which is often given less attention than laptop computer security by businesses. 3Mobile Protect is inexpensive, easily accessible for SMEs or corporate users and set-up effort is minimal.

SUPPORTING CHILD SAFETY

In 2018, WINDTRE launched the award-winning "NeoConnessi", an education platform in Italy to help parents and children navigate the online world safely together. The platform provides articles, insights, technical tips, and advice on how to create a healthy tension of control and trust with one's child as they begin their online introduction. Chosen experts and experienced parent bloggers also contribute to ensure content is best suited to the needs of parents. In 2021, it launched a children's story including important messages about surfing the web safely, developed in collaboration with the Italian Police. This was distributed to 14,000 classes of 7,000 schools in Italy.

In 2021, WINDTRE also added a new feature, "Neoconnessi Silver" with a training course, video tutorials, articles and insights dedicated to seniors to strengthen the bond between generations on digital safety and reduce the digital divide.

Creating a great place to work

The Telecommunication's division aims to create workplaces that attract and retain diverse talent and where all employees are empowered and supported to be their best selves at work.

While the needs and priorities in individual markets may differ, four key factors are important to achieving this objective across the division:

- A clear framework for employee engagement;
- Clear purposes and values which are embedded within the organisation, and to which all employees feel connected;
- An inclusive culture which values the diverse perspectives of all individuals and empowers them to be their best selves and work; and
- A structured approach to career development and performance management which provides meaningful career pathways and empowers all employees to realise their potential.

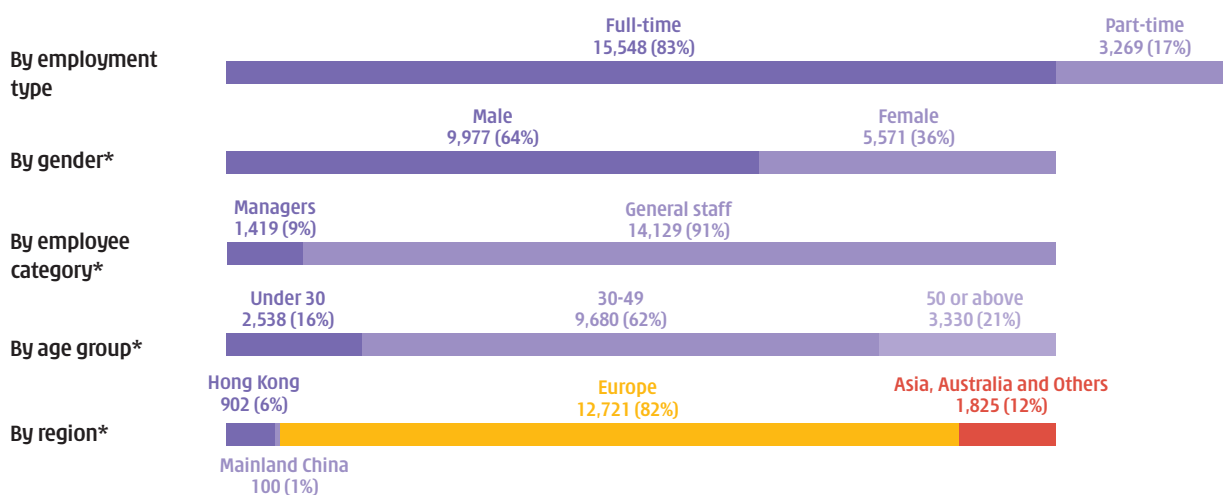
Employee engagement

A fundamental aspect of employee engagement is acting on timely, data driven insights to inform action plans, which are acted upon and updated as circumstances and performance change.

Reflecting this, the businesses conduct regular, confidential and anonymous employee engagement surveys (annually or twice-yearly) covering topics such as motivation, culture, leadership and personal development. Senior management reviews this feedback to understand strengths and issues highlighted by employees, and to implement improvement plans where needed. Managers also discuss findings and potential changes with their teams.

In different markets these surveys are complemented by additional surveys or other feedback mechanisms. For example, **3** Denmark conducts an additional annual survey on employees' mental and physical health; **3** Austria seeks 360 degree feedback for managers, and for the first time in 2021, surveyed perception of employer brand; and WINDTRE has conducted thematic surveys such as the 2021 Diversity and Inclusion survey.

Figure 37: Employee profile as at 31 December 2021



* full-time employees only

The division also takes advantage of other forums to elicit feedback such as through “Tell Us” sessions, onboarding and exit interviews and through external review platforms such as Glass Door.

WINDTRE’s engagement survey, “#diciamolanostra”, conducted since 2017, placed it in the Top Companies in Italy for Employee Experience for 2021, with an Employee Engagement rate of 87%, exceeding the benchmark of other Italian companies by 5%. Reflecting this performance, WINDTRE was also awarded Top Employer for Italy by the Top Employers Institute, for the third successive year in 2021.

During 2021, two of the businesses were recognised for their well-regarded employer brands. WINDTRE was recognised in the Best Employer Brand category of the Italy LinkedIn Talent Awards, and 3 Hong Kong was awarded Asia’s Best Employer Brand at the 12th Asia’s Best Employer Brand Awards, by the Employer Branding Institute.

Employee engagement during the pandemic

During the pandemic, the businesses worked to ensure that employees remained connected to the workplace, helping to mitigate the risk of disengagement and disconnection from company culture during extended periods of lockdown.

This included support with IT set-up for home working, increased team meetings including regular one-on-one meetings to support employee wellbeing, set-up of new intranet sites and workplace social media platforms, access to healthcare services, additional employee benefits such as vaccination leave, and updated health and safety arrangements to protect employees for return to office.

3 Hong Kong’s 3recreative Group, consisting of employees from different departments, was tasked with helping to enhance staff engagement and reinforce employees’ sense of belonging by organising events, sharing sessions and group purchases. The business also introduced a new communications platform including announcements and videos on business developments and other interesting topics such as sustainability to keep employees connected.

3 Ireland offered several support and wellness options for employees during lockdowns, such as the Employee Assistance Programme and Digital Doctor, as well as talks on mental health and other aspects of wellbeing. As part of its Wellbeing Strategy, it has partnered with Headspace, the leading mindfulness and meditation app, offering all employees free access to Headspace content for a year.

Engaging employees through sustainability

Sustainability has become important to the employee value proposition for many companies, and can make an important contribution to workforce engagement and positive workplace culture.

Reflecting this, the businesses have been engaging employees on sustainability through a range of mechanisms.

In 2021, WINDTRE launched a new and expansive sustainability strategy covering how it will integrate sustainability across the business out to 2030. To engage employees in this strategy, it rolled out a new sustainability training course including three modules, developed together with the Alliance for Sustainable Development (ASviS), an organisation dedicated to sustainable development in Italy. It also launched a new sustainability newsletter for employees and held regular live-streamed sustainability events through the business intranet.

In 2021, 3 Sweden held a sustainability engagement week, including daily live podcasts and interviews of senior executives interviewed discussing various sustainability topics, including: the 5G implementation and how it can be used by business to achieve sustainable outcomes; gender equality and how 3 Sweden is “closing the gap”; and the 3 Sweden climate strategy and why science-based targets are important.

LINKING SUSTAINABILITY TO COMPENSATION

In 2021, WINDTRE established a new managerial incentive plan linked to new sustainability targets and metrics it developed as part of a strategy refresh on topics such as GHG emissions reduction and gender diversity. This now accounts for a weighting of 10% of short-term incentives and 15% for long-term incentives. WINDTRE has also identified senior management responsibility and progress monitoring for each target included within the plan.

Learning and development

The telecommunications industry is evolving at a rapid speed with new technologies such as artificial intelligence and cloud computing demanding more from employee skillsets. The division therefore reviews the critical skills employees need to have on an ongoing basis and invests in programmes to keep their skills and knowledge relevant and future-ready.

3 UK and **3** Ireland are building digital skills in areas such as search engine optimisation, search engine marketing, DevOps, DesignOps and Adobe Experience Manager through digital platforms the businesses have invested in. **3** UK is also proactively equipping its people with skills in agile working methodologies, providing certification for Product Owners and Scrum Masters, and in user experience design and testing skills to support its user-centric design principles. **3** UK delivered over 650 hours of training across the business using its Pluralsight digital training tools. LinkedIn Learning is also leveraged to give employees access to over 16,000 courses on topics such as artificial intelligence, data science and business analytics.

WINDTRE invests in a range of activities and support measures to prepare its people for the challenges of the future, with its target linked to managerial incentive schemes. During the year it delivered more than 260,000 training hours across an expansive learning and development plan to cover soft, digital, and language skills, including its Digital Mindset Development Programme for all WINDTRE employees. WINDTRE also supported upskilling and reskilling for the technology transformation, and supported mentoring programmes for targeted groups of employees, including "Future Leaders".

Beyond digital skills training, skills gaps are identified through training needs analysis, and training is provided accordingly across a wide range of areas such as change management, negotiation, presentation, resilience, storytelling, time management, emotional intelligence, working virtually and business writing skills. The division also supports further education opportunities through education support funds.

Effective and flexible leadership is critical to business success and as such, a number of businesses have developed comprehensive programmes to facilitate high performance in leaders and their teams.

The Elevate Leadership Development Programme is available to all people managers at **3** UK and **3** Ireland. The programme is updated annually to provide comprehensive growth and development in all areas of leadership. At the senior level, the programme also provides for 180 assessments and 1-2-1 coaching for the participants.

3 UK and **3** Ireland also have access to the Phenomenal Teams programme which is designed to build high performance teams. The programme takes place over a six-month period and has robust assessment built in to test how effective the interventions have been for the team. There is also an Amplify New Manager Programme, available to all new people managers in the **3** UK and **3** Ireland businesses providing a comprehensive introduction to leading at **3**.

With a view to developing a pipeline of future talent and leaders in the company, **3** Hong Kong holds an annual management trainee programme for university graduates. New recruits participate in cross-functional rotations, in addition to comprehensive training and mentorship from senior leaders before taking on permanent roles within the business. Through its Reverse Mentorship Programme it also assigns senior managers with reverse mentees to share their insights from the perspective of the younger generation.

Inclusion and diversity

Across the division, the businesses recognise the value of embracing diverse perspectives, experiences and ideas, with a workforce which reflects the diversity of the customer bases they serve. They also recognise the importance of an inclusive culture to the overall employee value proposition, thereby supporting the attraction and retention of talented employees, enhancing employee motivation, and increasing productivity overall.

During 2021, the businesses focused on the establishment or further enhancement of employee resource groups to act as spaces for people to seek views, build action plans, and celebrate the diverse range of life experience within the organisation. Overall, each business aims to address the local needs of their employee base in their markets.

3 Denmark has a diverse employee demographic and a strong focus on promoting gender diversity, having set an overall gender diversity target of 40% female representation across the organisation, as well as individual gender diversity targets for retail stores, telesales and customer management teams. To support the achievement of these targets, specific initiatives have included a review of the recruitment process, with job descriptions and postings amended to motivate a broader applicant pool, as well as changes to applicant screening and interviews.

3 Austria has a strong focus on raising awareness and visibility of inclusive practices, and was awarded the equality seal of quality for its work to promote gender equality within its business and beyond. Its actions include modifying its job advertisements to be more inclusive and early encouragement of girls into technology careers, including the popular “bring-your-daughters” day, and cooperation with schools to attract female talent to into the telecommunications industry.

Recognising the importance of data driven insights on inclusion, WINDTRE launched a diversity survey which will underpin its future strategic planning. Its goal is to ensure gender equality in access to growth, career development and remuneration opportunities. It is targeting gender balance in recruitment and promotions, and is focused on equal pay for men and women, having obtained Equal Pay Certification from an external provider. In recognition of its efforts, WINDTRE was awarded the 2021 Award as Best Employer for Women by Istituto Tedesco di Qualità e Finanza and La Repubblica.

WINDTRE has also given additional attention to making its working environment and programmes inclusive to persons with disabilities by nominating a dedicated Disabilities Manager and establishing a disabilities steering committee including members from HR, IT, Privacy and Health and Safety. A Disabilities Hub has also been developed to promote awareness and ensure the services the business offers are inclusive to those with disabilities.

During 2021, **3** UK and **3** Ireland launched an updated strategy to be at the forefront in embracing diversity, inclusion and belonging. It expanded employee networks groups and external partnerships

and held events throughout 2021 to raise awareness, inform, and inspire the diverse workforce, attended by over 1,000 employees.

3 UK further signed the Business in the Community Race at Work Charter, a public commitment to improving the experiences of black, Asian and minority ethnic employees in the workplace, and progressed a range of actions aligned with this commitment.

3 UK also rolled out inclusive leadership training for its people managers, a new introduction to diversity, inclusion and belonging module as part of the employee onboarding process, as well as new Inclusive Meetings Guidance. The new **3** UK headquarters at Green Park was also designed to be an inclusive workspace which meets the needs of the diverse workforce, partners and customers. Design features include a range of spaces to support different ways of thinking and interacting, non-gender specific toilets and showers, technology systems inclusive of those with hearing and visual impairments in meeting rooms, signage to support a range of needs including the use of Braille, a family-friendly area and space for cultural needs.

During 2021, **3** Ireland also dedicated focus to supporting transgender and non-binary employees, and elevated its actions on cultural diversity with a range of cultural diversity celebration days, including an inclusive language event and enhancements to its Cultural Diversity hub. It also sought to influence greater alignment from supplier partners through its new Supplier Code of Conduct. Reflecting significant progress, **3** Ireland was awarded the “Gold accreditation” by Investors in Diversity, only the fifth organisation to achieve the gold standard in Ireland.

3 IRELAND STEM SCHOLARSHIP

In July 2021, in an effort to influence the wider system and attract women from around Ireland and across the world to study STEM subjects, **3** Ireland and Trinity College Dublin announced a new STEM scholarship partnership which will fund the creation of 25 Scholarships for Women in STEM over five years, and two Trinity Access Teacher Fellowships for three years.

“This project is very worthwhile. I’m really delighted that **3** has decided to support the teaching of maths at secondary level and STEM subjects for women in Trinity at third level. By working together we can help to persuade people to study these subjects and introduce them to the beauty and wonder of maths and science.”

– Dr Patrick Prendergast, Provost of Trinity College Dublin 2011 – 2021



3 Ireland and Trinity College Dublin creates a scholarship partnership to attract women to study STEM subjects

Environmental performance indicators

Environmental KPIs ⁽¹⁾	Unit	Ports and Related Services			Retail			
		2019	2020	2021	2019	2020	2021	
GHG emissions								
Total GHG emissions	tonne CO ₂ e	513,316	442,408	466,132	620,746	522,039	550,199	
Greenhouse gas emissions (Scope 1)		302,521	272,475	290,126	184,792	135,735 ⁽⁵⁾	144,907	
Greenhouse gas emissions (Scope 2) ⁽²⁾		210,795	169,933	176,006	435,954	386,304	405,292	
Total GHG emissions intensity	tonne CO ₂ e/	0.019	0.018	0.016	0.005	0.004	0.004	
Greenhouse gas emissions (Scope 1) intensity	revenue	0.011	0.011	0.010	0.001	0.001	0.001	
Greenhouse gas emissions (Scope 2) intensity	HK\$'000	0.008	0.007	0.006	0.003	0.003	0.003	
Use of energy								
Total energy consumption	kwh'000	1,755,526	1,603,913	1,730,294	1,246,777	1,160,753	1,227,085	
Total direct energy consumption		1,202,767	1,083,529	1,155,620	424,673	382,742	417,915	
Gasoline/Petrol		7,674	4,721	4,510	1,331	1,410	2,474	
Diesel		1,179,923	1,063,363	1,132,785	277,305	241,004	264,585	
Natural gas		10,447	11,358	11,641	74,092	79,268 ⁽⁵⁾	108,867	
Towngas		0	0	0	6,034	6,023	6,312	
Gas (exclude towngas and natural gas)		4,723	4,087	5,988	65,911	55,037	35,221	
Other fuels		0	0	0	0	0	0	
Wind		-	-	0	-	-	0	
Solar		-	-	696	-	-	456	
Hydro		-	-	0	-	-	0	
Biomass		0	0	0	0	0	0	
Self-generated energy		-	-	0	-	-	0	
Sale of energy		-	-	0	-	-	0	
Total indirect energy consumption		552,759	520,384	574,674	822,104	778,011	809,170	
Electricity		552,759	520,384	573,571 ⁽³⁾	822,104	778,011	809,170	
Heating		-	-	1,103	-	-	0	
Renewable electricity purchased and supported by green certificates		-	-	47,482	-	-	164,250	
% renewable electricity purchased and supported by green certificates	%	-	-	8%	-	-	20%	
Total energy consumption intensity	kwh/revenue	65.029	63.944	59.686	9.410	9.565	9.378	
Total direct energy consumption intensity	HK\$'000	44.554	43.198	39.863	3.205	3.154	3.194	
Total indirect energy consumption intensity		20.476	20.746	19.823	6.205	6.411	6.184	
Air emissions								
NOx emissions	tonne	107	100	123	393	322	343	
SOx emissions		2	1	2	0	0	0	
Particulate matter emissions		11	10	12	39	32	34	
Waste produced								
Total hazardous waste produced	tonne	4,674	3,403	3,231	703	351	843	
Total hazardous waste produced intensity	tonne/revenue	0.000	0.000	0.000	0.000	0.000	0.000	
	HK\$'000							
Total non-hazardous waste produced	tonne	25,868	15,957	31,892 ⁽⁴⁾	83,520	77,528	77,595	
Total non-hazardous waste produced intensity	tonne/revenue	0.001	0.001	0.001	0.001	0.001	0.001	
	HK\$'000							
Total waste recycled	tonne	-	-	6,210	-	-	72,885	
Recycled material usage	tonne	-	-	0	-	-	7,778	

	Infrastructure			Telecommunications			Total		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
	10,313,728	9,753,816	8,499,422	906,388	812,875	823,413	12,354,178	11,531,138	10,339,166
	8,486,783	8,147,385 ⁽⁶⁾	6,952,156	29,334	24,565	20,679	9,003,430	8,580,160	7,407,868
	1,826,945	1,606,431	1,547,266	877,054 ⁽¹⁰⁾	788,310 ⁽¹⁰⁾	802,734	3,350,748	2,950,978	2,931,298
	0.227	0.202	0.168	0.009	0.008	0.008	0.040	0.039	0.033
	0.187	0.169	0.137	0.000	0.000	0.000	0.029	0.029	0.024
	0.040	0.033	0.031	0.009	0.008	0.008	0.011	0.010	0.009
	29,752,040	29,286,309	29,061,968	1,995,642	2,053,597	2,239,930	34,749,985	34,104,572	34,259,277
	28,457,166	27,896,625	27,725,702	72,280	57,662	56,169	30,156,886	29,420,558	29,355,406
	32,505	30,250	29,718	8,716	9,385 ⁽¹¹⁾	8,159	50,226	45,766	44,861
	542,264	537,080	458,369	54,742	40,033 ⁽¹¹⁾	39,665	2,054,234	1,881,480	1,895,404
	10,525,403	10,840,590	10,621,222	8,683	8,203 ⁽¹¹⁾	7,485	10,618,625	10,939,419	10,749,215
	0	0	0	0	0	0	6,034	6,023	6,312
	4,809	6,882	1,161	139	41	13	75,582	66,047	42,383
	13,916,434 ⁽⁶⁾	11,630,358 ⁽⁶⁾	11,838,143	0	0	0	13,916,434	11,630,358	11,838,143
	-	-	2,406	-	-	0	-	-	2,406
	-	-	438	-	-	847	-	-	2,437
	-	-	414	-	-	0	-	-	414
	3,435,751 ⁽⁶⁾	4,851,465 ⁽⁶⁾	4,709,969	0	0	0	3,435,751	4,851,465	4,709,969
	-	-	6,102,014	-	-	0	-	-	6,102,014
	-	-	(6,038,152)	-	-	0	-	-	(6,038,152)
	1,294,874	1,389,684	1,336,266	1,923,362	1,995,935	2,183,761	4,593,099	4,684,014	4,903,871
	1,294,874 ⁽⁷⁾	1,389,684 ⁽⁷⁾	1,334,499	1,923,362	1,995,935	2,181,906	4,593,099	4,684,014	4,899,146
	-	-	1,767	-	-	1,855	-	-	4,725
	-	-	204,668	-	-	570,105	-	-	986,505
	-	-	15%	-	-	26%	-	-	20%
	654.974	606.687	574.793	19.496	20.602	22.126	113.090	115.851	109.937
	626.469	577.899	548.364	0.706	0.578	0.555	98.142	99.940	94.200
	28.506	28.788	26.429	18.790	20.023	21.571	14.948	15.911	15.736
	8,027	8,558	8,258	50	42	29	8,577	9,022	8,753
	636	726	727	0	0	0	638	727	729
	233	306	269	5	4	3	288	352	318
	33,009	47,655	25,376 ⁽⁸⁾	883	1,445	829	39,269	52,854	30,279
	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
	508,859	304,074	280,158	3,649	1,927	3,375	621,896	399,486	393,020
	0.011	0.006	0.006	0.000	0.000	0.000	0.002	0.001	0.001
	-	-	149,788	-	-	3,348	-	-	232,231
	-	-	1,755,561	-	-	0	-	-	1,763,339

Annex 1 – Environmental and social performance indicators

Environmental KPIs ⁽¹⁾	Unit	Ports and Related Services			Retail			
		2019	2020	2021	2019	2020	2021	
Use of water								
Total water consumption	'000 m ³	856	740	740	2,404	1,838	1,686	
Total water withdrawal		-	-	740	-	-	1,686	
Surface water		-	-	0	-	-	0	
Groundwater		-	-	7	-	-	0	
Seawater		-	-	0	-	-	0	
Third-party water		-	-	732	-	-	1,686	
Other sources		-	-	1	-	-	0	
Total water discharged		-	-	0	-	-	0	
Surface water		-	-	0	-	-	0	
Third-party water		-	-	0	-	-	0	
Other sources		-	-	0	-	-	0	
Water consumption intensity	m ³ /revenue HK\$'000	0.032	0.029	0.026	0.018	0.015	0.013	
Water withdrawal from areas with water stress	'000 m ³	-	-	0	-	-	0	
Water withdrawal from freshwater sources		-	-	0	-	-	0	
Water recycled		-	-	3	-	-	0	
Packaging material								
Total packaging material used for finished products	tonne	16	15	0	58,757	56,837	67,514	
Plastic		16	15	0	26,934	24,789	34,416	
Paper		0	0	0	23,152	23,211	22,940	
Metal		0	0	0	5,395	4,908	5,427	
Glass		0	0	0	2,761	3,433	3,337	
Other packaging material		0	0	0	515	496	1,394	
Packaging material intensity	tonne/thousand of products ^(a) or tonne/tonne of products ^(b)	N/A	N/A	N/A	0.037 ^(a)	0.039 ^(a)	0.043 ^(a)	

Notes:

- 1) "-" refers to items not reported in previous years.
- 2) Scope 2 emissions are restated for 2020 to reflect the market-based method.

Ports division:

- 3) The increase in electricity consumption usage was mainly due to supply chain pressures during 2021 leading to above-average increases in port throughput.
- 4) In 2021, more waste was generated due to a large increase in port throughput/operations. 2021 also marked the resumption of the division's recycling programme which had been previously disrupted by the pandemic.

Retail division:

- 5) Natural gas consumption and the related scope 1 emissions for 2020 are restated to reflect improvements in data accuracy and late invoices from suppliers.

Infrastructure division:

- 6) The 2020 "Other fuels" consumption and the related scope 1 emissions have been restated to reflect more accurate non-renewable energy consumption at Jinwan Power Plant. In addition, the data reported under "Other fuels" has been re-scoped to now report biomass separately which was previously included within this data point.
- 7) The reporting scope for electricity and water consumption has been re-scoped with 2019 and 2020 figures where relevant and available.
- 8) Hazardous waste decreased mainly due to an update in definition of hazardous waste for EnviroNZ, in which a portion of the hazardous waste reported in 2020 has been reclassified to non-hazardous waste in 2021.
- 9) Paper consumption for packaging material for 2020 has been restated to reflect more accurate figures.

Telecommunications division:

- 10) 2019 and 2020 figures have been restated for scope 2 emissions due to updates to emissions factors.
- 11) 2020 figures have been restated for gasoline/petrol, diesel and natural gas to reflect the most accurate data.
- 12) 2019 and 2020 figures have been restated for plastic and paper consumption for packaging material due to an update in data scoping.

	Infrastructure			Telecommunications			Total		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
	35,665	646,624 ⁽⁷⁾	380,855	227	169	129	39,152	649,371	383,410
	-	-	688,000	-	-	129	-	-	690,555
	-	-	270,975	-	-	56	-	-	271,031
	-	-	20,314	-	-	2	-	-	20,323
	-	-	391,701	-	-	0	-	-	391,701
	-	-	3,541	-	-	69	-	-	6,028
	-	-	1,469	-	-	2	-	-	1,472
	-	-	(307,145)	-	-	0	-	-	(307,145)
	-	-	(70,508)	-	-	0	-	-	(70,508)
	-	-	(236,544)	-	-	0	-	-	(236,544)
	-	-	(93)	-	-	0	-	-	(93)
	0.785	13.395	7.533	0.002	0.002	0.001	0.127	2.206	1.230
	-	-	546	-	-	0	-	-	546
	-	-	0	-	-	0	-	-	0
	-	-	184,797	-	-	0	-	-	184,800
	3,545	2,949	2,570	1,271	1,253	723	63,589	61,054	70,807
	0	3	5	300 ⁽¹²⁾	312 ⁽¹²⁾	127	27,250	25,119	34,548
	3,545	2,946 ⁽⁹⁾	2,565	970 ⁽¹²⁾	941 ⁽¹²⁾	442	27,667	27,098	25,947
	0	0	0	0	0	0	5,395	4,908	5,427
	0	0	0	0	0	0	2,761	3,433	3,337
	0	0	0	1	0	154	516	496	1,548
	1.733 ^(b)	1.250 ^(b)	1.114 ^(b)	0.006 ^(a)	0.005 ^(a)	0.004 ^(a)	N/A	N/A	N/A

Social performance indicators



Social KPIs ⁽¹⁾		Ports and Related Services		Retail		Infrastructure		Telecommunications		Total	
		2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Number of employees											
Total		18,477	18,308	127,791	126,644	32,732	32,713	18,582	18,817	197,582	196,482
By employment type	Full-time	15,763	15,180	75,110	74,871	30,579	30,537	15,148	15,548	136,600	136,136
	Part-time	2,714	3,128	52,681	51,773	2,153	2,176	3,434	3,269	60,982	60,346
Number of full-time employees											
By gender	Male	14,164	13,670	17,789	17,452	23,090	23,022	9,862	9,977	64,905	64,121
	Female	1,599	1,510	57,321	57,419	7,489	7,515	5,286	5,571	71,695	72,015
By employee category	Manager grade or above	606	564	2,811	2,795	3,136	2,278	1,105	1,419	7,658	7,056
	General staff	15,157	14,616	72,299	72,076	27,443	28,259	14,043	14,129	128,942	129,080
By age group	Under 30	1,925	1,818	28,608	27,847	4,606	4,431	2,518	2,538	37,657	36,634
	30-49	10,022	9,503	41,063	41,520	16,031	16,107	9,772	9,680	76,888	76,810
	50 or above	3,816	3,859	5,439	5,504	9,942	9,999	2,858	3,330	22,055	22,692
By geographical region	Hong Kong	293	277	8,137	7,651	2,600	2,561	847	902	11,877	11,391
	Mainland China	30	27	27,791	26,725	1,689	1,689	100	100	29,610	28,541
	Europe	4,765	4,837	16,369	17,279	17,327	17,125	12,317	12,721	50,778	51,962
	Canada	0	0	0	0	2,431	2,395	0	0	2,431	2,395
	Asia, Australia and Others	10,675	10,039	22,813	23,216	6,532	6,767	1,884	1,825	41,904	41,847
Turnover rate for full-time employees											
Overall		5% ⁽⁵⁾	7%	30%	31%	9%	11%	14%	16%	21%	22%
By gender	Male	5%	7%	25%	29%	9%	11%	15%	16%	13%	16%
	Female	8% ⁽⁵⁾	8%	31%	32%	10%	12%	13%	16%	27%	28%
By age group	Under 30	7% ⁽⁵⁾	12%	45%	50%	10%	18%	35%	40%	38%	43%
	30-49	4% ⁽⁵⁾	6%	21%	21%	8%	10%	11%	12%	15%	15%
	50 or above	8%	8%	15%	19%	10%	10%	8%	9%	11%	12%
By geographical region	Hong Kong	15%	21%	13%	25%	5%	8%	18%	41%	12%	23%
	Mainland China	7%	11%	36%	29%	4%	5%	22%	10%	34%	27%
	Europe	5%	6%	32%	42%	7%	8%	14%	14%	17%	21%
	Canada	0%	0%	0%	0%	21%	38%	0%	0%	21%	37%
	Asia, Australia and Others	5% ⁽⁵⁾	7%	27%	29%	11%	13%	15%	12%	18%	20%
Work-related fatalities ⁽²⁾											
Number of work-related fatalities		1	3	0	1	2	2	0	0	3	6
By employee type	Full-time employees	0	1	0	1	1	2	0	0	1	4
	Contractors	1	2	0	0	1	0	0	0	2	2
Rate of work-related fatalities (full-time employees)		0.000%	0.007%	0.000%	0.001%	0.003%	0.007%	0.000%	0.000%	0.001%	0.003%
Lost days due to work injury ⁽³⁾											
Number of lost days due to work injury (employees)		5,800 ⁽⁵⁾	5,992	18,610	22,273	4,129	3,448	1,599	605	30,138	32,318
Number of lost time injury incidents (employees)		306	335	364	505	109	159	73	21	852	1,020
Percentage of full-time employees who received training ⁽⁴⁾											
Overall		45%	54%	79%	91%	92%	82%	74%	73%	78%	84%
Percentage of full-time employees who received training among total trained full-time employees											
By gender	Male	88%	89%	20%	22%	81%	78%	66%	65%	43%	41%
	Female	12%	11%	80%	78%	19%	22%	34%	35%	57%	59%
By employee category	Manager grade or above	4%	3%	3%	3%	10%	12%	8%	7%	5%	5%
	General staff	96%	97%	97%	97%	90%	88%	92%	93%	95%	95%









Social KPIs ⁽¹⁾		Ports and Related Services		Retail		Infrastructure		Telecommunications		Total	
		2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Average hours of training completed by full-time employees ⁽⁴⁾											
Overall		10.9 ⁽⁵⁾	13.5	17.4	28.8 ⁽⁶⁾	20.6	24.9	18.7	24.3 ⁽⁷⁾	17.5	25.5
By gender	Male	11.2 ⁽⁵⁾	13.5	10.8	20.3	22.4	27.9	20.5	24.4	16.3	21.3
	Female	8.9 ⁽⁵⁾	13.5	19.3	31.3	15.2	15.6	15.2	24.2	18.5	28.9
By employee category	Manager grade or above	7.8 ⁽⁵⁾	10.7	8.4	15.8	23.3	39.5	20.9	15.8	16.2	21.7
	General staff	11.0 ⁽⁵⁾	13.6	17.7	29.2	20.3	23.7	18.5	25.1	17.6	25.7
Number of suppliers											
Total		12,442 ⁽⁵⁾	15,996	15,337	14,984	30,440	33,848	28,264	23,029	86,483	87,857
By geographical region	Hong Kong	71 ⁽⁵⁾	1,818	3,034	2,825	4,198	3,500	362	414	7,665	8,557
	Mainland China	101 ⁽⁵⁾	2,231	1,053	1,242	884	979	61	351	2,099	4,803
	Europe	3,312 ⁽⁵⁾	3,318	5,339	5,960	9,339	11,917	14,539	9,170	32,529	30,365
	Canada	8 ⁽⁵⁾	11	0	26	4,742	4,994	4	6	4,754	5,037
	Asia, Australia and Others	8,950 ⁽⁵⁾	8,618	5,911	4,931	11,277	12,458	13,298	13,088	39,436	39,095
Percentage of total products sold or shipped subject to recalls for safety and health reasons											
Percentage of total products sold or shipped subject to recalls for safety and health reasons		0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Number of complaints received											
Products related		0	0	3,074	3,133	7,173	8,746	61,883	57,924	72,130	69,803
Services related		1,721 ⁽⁵⁾	2,002	109,987	128,676	168,906	264,285	1,584,184 ⁽⁸⁾	1,226,730	1,864,798	1,621,693
Number of employees who received training on anti-corruptive/ethics and integrity											
Total		2,450	2,200	53,374	96,132	4,007	6,342	11,611	7,644	71,442	112,318
By employment type	Full-time	-	1,826	-	68,337	-	6,111	-	5,946	-	82,220
	Part-time	-	374	-	27,795	-	231	-	1,698	-	30,098
Percentage of full-time and part-time employees who received training on anti-corruptive/ethics and integrity		13%	11%	42%	64%	12%	19%	62%	36%	36%	50%
Number of training hours on anti-corruptive/ethics and integrity completed by employees											
Total		2,823	1,911	29,250	96,614 ⁽⁶⁾	3,921	9,556	20,728	17,611	56,722	125,692
By employment type	Full-time	-	1,534	-	83,905	-	9,320	-	13,446	-	108,205
	Part-time	-	377	-	12,709	-	236	-	4,165	-	17,487




Notes:












- "-" refers to items not reported in the previous years.
- In 2019, there were 7 work-related fatalities (1 Ports employee and 3 contractors, 1 Retail employee, 1 Infrastructure contractor and 1 Telecommunications contractor). The fatality rate for full-time employees in 2019 was 0.001%.
- In 2019, the total number of lost days due to work injury (employees) was 32,883 and the number of lost time injury incidents (employees) was 1,057.
- Training data for full-time employees included those for the existing employees as at the end of the reporting period and the employees who left the Group during the reporting period.
- For the Ports division, restatements have been made in the turnover rate for full-time employees, the number of lost days due to work injury (employees), the average hours of training completed by full-time employees, the number of suppliers and the number of service-related complaints received for 2020 due to change in scope.
- For the Retail division, the average number of training hours increased significantly due to a greater emphasis on, and availability of, virtual training organised in 2021. The number of training hours on anti-corruption/ethics and integrity also increased due to more refresher training conducted in some business units in 2021.
- The average number of training hours for the Telecommunications division increased mainly due to more training activities conducted at WINDTRE to support the overall digital transformation and to develop a common digital mindset for all the employees in 2021.
- The number of service-related complaints for the Telecommunications division for 2020 was restated as 3 Indonesia has changed the reporting scope.







Hong Kong Stock Exchange ESG Guide content index

Subject Areas, Aspects, General Disclosures and KPIs		Page	Notes and relevant policies
Mandatory Disclosure Requirements (MDR)			
MDR 13	A statement from the board containing the following elements: (a) a disclosure of the board's oversight of ESG issues; (b) the board's ESG management approach and strategy, including the process used to evaluate, prioritise and manage material ESG-related issues (including risks to the issuer's businesses); and (c) how the board reviews progress made against ESG-related goals and targets with an explanation of how they relate to the issuer's businesses.	31	
MDR 14	A description of, or an explanation on, the application of the (a) Materiality, (b) Quantitative, (c) Consistency reporting principles.	7-8	
MDR 15	Reporting boundaries of the ESG report and the process of setting them.	5	
A. Environmental			
Aspect A1: Emissions			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste.	32-35	Environmental policy  Supplier Code of Conduct  The Group is not aware of any incidents of non-compliance with laws and regulations that may have a significant impact on the Group concerning air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste during the year.
KPI A1.1	The types of emissions and respective emissions data.	13-14, 45, 62, 102, 126-128	
KPI A1.2	Direct (scope 1) and energy indirect (scope 2) greenhouse gas emissions (in tonnes) and, where appropriate, intensity.	13-14, 45, 62, 102, 126-128	
KPI A1.3	Total hazardous waste produced (in tonnes) and, where appropriate, intensity.	150-151	
KPI A1.4	Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity.	150-151	
KPI A1.5	Description of emission target(s) set and steps taken to achieve them.	12-13, 43, 62, 100-101, 126-127	
KPI A1.6	Description of how hazardous and non-hazardous wastes are handled, and a description of reduction target(s) set and steps taken to achieve them.	21-22, 27, 72-75, 110, 138-140	

Aspect A2: Use of Resources			
General Disclosure	Policies on the efficient use of resources, including energy, water and other raw materials.	32	Sustainability Policy  Environmental Policy  Supplier Code of Conduct 
KPI A2.1	Direct and/or indirect energy consumption by type in total (kWh in '000s) and intensity.	150-151	
KPI A2.2	Water consumption in total and intensity.	152-153	
KPI A2.3	Description of energy use efficiency target(s) set and steps taken to achieve them.	12-13, 43, 62-63, 100-101, 126-127	Energy efficiency is embedded in the scope 1 and 2 emissions reduction targets and initiatives.
KPI A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.		99% of water consumption relates to the Infrastructure division. Based on the water risk framework of the World Resources Institute's publication on financial risks from water constraints on power generation, the Group currently has no production plants/sites located in water-stressed areas, and operations are considered low risk. For the most water-intensive operations (mostly in power generation), these businesses are reusing wastewater and rainwater at power stations, adopting water-efficient appliances within premises and preserving water quality by reducing discharge .
KPI A2.5	Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	152-153	Packaging material intensity is only relevant to the Retail division.
Aspect A3: The Environment and Natural Resources			
General Disclosure	Policies on minimising the issuer's significant impacts on the environment and natural resources.	32	Sustainability Policy  Environmental Policy  Supplier Code of Conduct 
KPI A3.1	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	12-25, 43-50, 62-64, 92-113, 126-129	
Aspect A4: Climate Change			
General Disclosure	Policies on identification and mitigation of significant climate-related issues which have impacted, and those which may impact, the issuer.	32	Sustainability Policy  Environment Policy 
KPI A4.1	Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.	12-25, 43-45, 62, 100-102, 126-128	













B. Social			
Employment and Labour Practices			
Aspect B1: Employment			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	32	Code of Conduct  Board Diversity Policy  The Group is not aware of any incidents of non-compliance with laws and regulations that may have a significant impact on the Group concerning compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare during the year.
KPI B1.1	Total workforce by gender, employment type (for example, full-or part-time), age group and geographical region.	154	
KPI B1.2	Employee turnover rate by gender, age group and geographical region.	154	
Aspect B2: Health and Safety			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	32	Health and Safety Policy  The Group is not aware of any incidents of non-compliance with laws and regulations that may have a significant impact on the Group concerning providing a safe working environment and protecting employees from occupational hazards during the year.
KPI B2.1	Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	154	
KPI B2.2	Lost days due to work injury.	154	
KPI B2.3	Description of occupational health and safety measures adopted, and how they are implemented and monitored.	52-53, 80-81, 114-116, 147	
Aspect B3: Development and Training			
General Disclosure	Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.	32	
KPI B3.1	The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	154	
KPI B3.2	The average training hours completed per employee by gender and employee category.	155	

Aspect B4: Labour Standards			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labour.	32	Human Rights Policy  Modern Slavery and Human Trafficking Statement  Supplier Code of Conduct  The Group is not aware of any incidents of non-compliance with laws and regulations that may have a significant impact on the Group concerning preventing child and forced labour during the year.
KPI B4.1	Description of measures to review employment practices to avoid child and forced labour.	57, 83	
KPI B4.2	Description of steps taken to eliminate such practices when discovered.	83	
Aspect B5: Supply Chain Management			
General Disclosure	Policies on managing environmental and social risks of the supply chain.	32	Human Rights Policy  Supplier Code of Conduct  Modern Slavery and Human Trafficking Statement 
KPI B5.1	Number of suppliers by geographical region.	155	
KPI B5.2	Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, and how they are implemented and monitored.	23-24, 56-57, 82-83	
KPI B5.3	Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored.	23-24, 56-57, 82-83	
KPI B5.4	Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored.	23-24, 56-57, 82-83	Policy on Appointment of Third Party Representatives 
Aspect B6: Product Responsibility			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.	32	Code of Conduct  Policy on Personal Data Governance  The Group is not aware of any incidents of non-compliance with laws and regulations that may have a significant impact on the Group concerning health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress during the year.
KPI B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons.	155	
KPI B6.2	Number of products and service related complaints received and how they are dealt with.	155	
KPI B6.3	Description of practices relating to observing and protecting intellectual property rights.		The Group has appropriate mechanisms and procedures which monitor issues relating to the observation and protection of intellectual property rights.
KPI B6.4	Description of quality assurance process and recall procedures.	80-81	
KPI B6.5	Description of consumer data protection and privacy policies, and how they are implemented and monitored.	9, 32, 35, 57, 81-82, 120, 143-145	Information Security Policy  Policy on Personal Data Governance 

Aspect B7: Anti-corruption			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	32	Code of Conduct  Anti-Fraud and Anti-Bribery Policy  Policy on Appointment of Third Party Representatives  The Group is not aware of any incidents of non-compliance with laws and regulations that may have a significant impact on the Group concerning bribery, extortion, fraud and money laundering during the year.
KPI B7.1	Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.		The were no concluded legal cases regarding corrupt practices brought against the Group or its employees that had a significant impact on the Group in the reporting period.
KPI B7.2	Description of preventive measures and whistle-blowing procedures, and how they are implemented and monitored.	33-35, 56	Whistleblowing Policy 
KPI B7.3	Description of anti-corruption training provided to directors and staff.	33-35, 56	
Community			
Aspect B8: Community Investment			
General Disclosure	Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	32	Sustainability Policy  Media, Public Engagement and Donation Policy 
KPI B8.1	Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	56, 84-85, 116, 140-143	Each core business has a set of focus areas relevant to the industries and countries in which they operate. In 2020, community programmes focused on serving the needs of the community in the face of the pandemic.
KPI B8.2	Resources contributed (e.g. money or time) to the focus area.	29-30, 56, 61, 75, 84-85, 119-120, 141-143	Donations to charitable organisations and volunteer hours contributed by the Company and its subsidiaries during the year amounted to approximately HK\$45 million and 71,000 hours respectively.

UN Global Compact content index

The Group is committed to making the 10 principles part of its strategy, culture and day-to-day operations. These are reflected in the below mentioned written commitments and policies, with further deep dive information provided throughout this Sustainability Report. Performance metrics are tracked and are available on pages 150-155.

UN Global Compact Principle	CKHH written commitment/policies	Sustainability report page reference & further notes
Human Rights		
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights	Human Rights Policy  Modern Slavery and Human Trafficking Statement  Supplier Code of Conduct 	As per the Group's Human Rights Policy, Modern Slavery and Human Trafficking Statement, and Supplier Code of Conduct, respect for human rights is a fundamental value of the Group. These policies lay out the principles and commitments by which the Group respects human rights throughout its business activities.
Principle 2: make sure that they are not complicit in human rights abuses		Case study information on how the Retail division is addressing human rights protection in its supply chain is available on pages 82-83.
Labour		
Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	Human Rights Policy  Modern Slavery and Human Trafficking Statement  Code of Conduct 	The Group aims to create great places to work, with the following key aims: <ul style="list-style-type: none"> • Attract, develop and retain a high-performing and engaged workforce. • Make work an equitable, diverse and inclusive environment that reflects the diversity of the communities in which the Group operates. • Promote zero harm and healthy workplaces. How the Group is doing this is explored in detail on pages: 28-29, 52-55, 65-68, 114-119, 146-149.
Principle 4: the elimination of all forms of forced and compulsory labour		
Principle 5: the effective abolition of child labour		The Group respects its employees' right to join or form a labour union without fear of reprisal, intimidation or harassment. Where employees are represented by a legally recognised union, the Group is committed to establishing a constructive dialogue with their chosen representatives. It is committed to bargaining in good faith with such representatives.
Principle 6: the elimination of discrimination in respect of employment and occupation		The Group prohibits the use of all forms of child labour or forced labour, including prison labour, bonded labour, any form of slavery and any form of human trafficking.
		The Group is committed to providing a work environment that is free from all forms of discrimination on the basis of race, ethnicity, gender, creed, religion, age, disability, sexual preference or position. It is a Group policy to provide equal opportunity to all employees with regard to hiring, pay rates, training and development, promotions and other terms of employment.
		Case study information on how the Group is addressing inclusion and diversity is available on pages 28-29, 54-55, 68-71, 118-119.
Environment		
Principle 7: Businesses should support a precautionary approach to environmental challenges	Sustainability Policy  Environmental Policy  Supplier Code of Conduct 	The Group is committed to protecting the environment with three key objectives according to its Sustainability Framework and Sustainability Policy: <ol style="list-style-type: none"> 1. Take action on climate change 2. Protect natural resources 3. Promote a circular economy
Principle 8: undertake initiatives to promote greater environmental responsibility		It is also dedicated to developing business solutions to drive the net-zero transition and a circular economy as well as promote sustainable sourcing.
Principle 9: encourage the development and diffusion of environmentally friendly technologies		The ways in which it is managing these objectives are being managed, as well as the targets being set, are explored in further detail on pages: 12-26, 40-50, 62-64, 72-78, 82, 100-113, 126-129.
Anti-Corruption		
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery	Code of Conduct  Anti-Fraud and Anti-Bribery Policy  Supplier Code of Conduct 	The Group is dedicated to adhering to the highest compliance and anti-corruption standards and acting with integrity always.
		This is further explored on pages 19-21.

List of abbreviations

Abbreviation	Long form
AFAB	Anti-Fraud and Anti-Bribery
AGV	Automatic Guided Vehicle
APIS	Application Programme Interfaces
ASviS	Alliance for Sustainable Development
ASW	A.S. Watson
AVR	AVR-Afvalverwerking B.V.
BAEM	Black, Asian and Ethnic Minority
BEPI	Business Environmental Protection Initiative
BEST	Terminal Catalunya S.A.
BSCI	amfori Business Social Compliance Initiative
CAWG	Climate Action Working Group
CDP	Carbon Disclosure Project
CENSIS	Centro Studi Investimenti Sociali
CKH IOD	CK Hutchison Innovation Opportunities Development
CKHGT	CK Hutchison Group Telecom
CKI	CK Infrastructure Holdings Limited
CO ₂	Carbon dioxide
DEFRA	Department for Environment, Food and Rural Affairs
DER	Distributed energy resources
EAC	Energy attribute certificate
ECH	Empty Container Handler
ECT	Hutchison Ports Europe Container Terminals B.V.
EDL	Energy Developments Pty Limited
EHC	Emergency Hormonal Contraceptive pill
ESG Guide	Environmental, Social and Governance Reporting Guide
ETSI	European Telecommunications Standards Institute
FSC	Forest Stewardship Council
FWA	Fixed Wireless Access
GDPR	General Data Protection Regulation
GGBS	Granulated blast-furnace slag
GHG	greenhouse gas
Global Commitment	New Plastics Economy Global Commitment
GRI	Global Reporting Initiative
GSMA	Global System for Mobile Communications
HKCAAVQ	Hong Kong Council for Accreditation of Academic and Vocational Qualifications
Hutchison Ports BACTSSA	Hutchison Ports Buenos Aires Container Terminal Services S.A.
Hutchison Ports FCP	Hutchison Ports Freeport Container Port Limited
Hutchison Ports HIT	Hutchison Ports Hongkong International Terminals Limited
HVAC	Heating, ventilation and air conditioning

Abbreviation	Long form
HyP SA	Hydrogen Park South Australia
InTEGReL	Integrated Transport Gas Electric Research Laboratory
IoT	Internet of Things
ISF	Information Security Forum
KPI	Key Performance Indicators
LFG	landfill gas
LiDAR	Light Detection and Ranging
MHFA	Mental Health First Aider
NB-IoT	NarrowBand-IoT
nGen	Next Generation Terminal Management System
NPE	New Plastics Economy
OECD	Organisation for Economic Co-operation and Development
ONE	Ocean Network Express
OT	Operational Technology
PEFC	Programme for the Endorsement of Forest Certification
PPA	power purchase agreement
PV	photovoltaic
PVC	polyvinyl chloride
QA	Quality Assurance
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
REFCL	Rapid Earth Fault Current Limiters
RISQS	Railway Industry Supplier Qualification Scheme
RNG	renewable natural gas
rPET	recycled polyethylene terephthalate
RS	Reach-stacker
RSPO	Roundtable on Sustainable Palm Oil
RTGCS	rubber-tyred gantry cranes
RVMS	reverse vending machines
SAFCOM	Hutchison Ports Group Safety Committee
SASB	Sustainable Accounting Standards Board
SBTi	Science Based Targets initiative
SC	Straddle Carriers
SDGs	United Nations Sustainable Development Goals
STEM	Science, technology, engineering, and mathematics
TCFD	Taskforce on Climate-related Financial Disclosures
TEU	Twenty-foot Equivalent Unit
The Code	The Code of Conduct
TMC	The Mekong Club

Annex 4 – List of abbreviations

Abbreviation	Long form
UN	United Nations
WWF	World Wide Fund for Nature
ZT	Zero tolerance



48th Floor, Cheung Kong Center, 2 Queen's Road Central, Hong Kong

Telephone: +852 2128 1188

Facsimile: +852 2128 1705

www.ckh.com.hk