

PLANET PASSIONATE REPORT

2022

Planet Passionate - Our Journey Continues*

We are delighted to present some of the progress we've made not only in 2022, but also during our planet passionate journey so far. To every colleague who has contributed to our journey to date – thank you!

GHG Emissions[1]

26%
reduction from base year

134,000+ tCO_2e reduction in 2022 vs 2021

132,000+ tCO_2e reduction from base year

EV Chargers

82 installed chargers in 2022

198 installed chargers in total

Renewable Fuel Contracts

24.9 GWh
potential contribution

9 New contracts in 2022

18 contracts in total

Electric Forklifts

44 New forklifts in 2022

490 Forklifts in total

Waste to Landfill

42% reduction
since 2020

17 projects in 2022

9,700+ tonnes diverted in 2022

Solar PV

57 systems in total

6.4 GWh additional expected generation from 2022 projects

36.6 GWh expected generation from all installed systems

Renewable Electricity Contracts

231.7 GWh
potential contribution

24 New contracts in 2022

76 contracts in total

PET Bottles*

***equivalent no. of PET bottles by weight**

803 million recycled in 2022

2,219 million recycled since 2020

Rainwater Harvesting

36
systems in total

40ML capacity in 2022

68ML capacity in total

64+

Planet Passionate Communities projects to date

100+ projects in 2022

* Information on this page apply to our whole business (i.e. whole Business includes all manufacturing, assembly and R&D sites within the Kingspan Group, including acquisitions since 2020.)
[1]: Scope 1&2 GHG emissions. Excluding biogenic emissions. Scope 2 GHG emissions calculated using market-based methodology.

Contents

About this Report	03
A message from our CEO	04
The year in review	05
Kingspan	06
- Who we are	06
- We are Planet Passionate	07
- How we create value	08
- Our approach to sustainability	09
- Partnerships and initiatives	10
Governance	11
- Corporate Governance	12
- Sustainability governance	13
- Responsible supply chain	14
Environment	15
- Carbon and energy	16
- Circularity	25
- Water	28
Planet Passionate	29
- Target progress	31
- Carbon and energy	32
- Circularity	35
- Water	38
Society	41
Appendices	47

About this Report

This is Kingspan Group plc's ("Kingspan") third annual Planet Passionate report (the "Report"), which covers the period 01.01.2022 to 31.12.2022.

This Report was published on March 7th, 2023 and it covers the same period as Kingspan's 2022 Annual Report (01.01.22 - 31.12.22). The Report covers all entities that are fully consolidated in our financial statements. The environmental performance of our offices is not included in our performance indicators because it is considered immaterial.

Kingspan is committed to collecting and presenting accurate and reliable information. To this end, the energy, waste and water data presented in the Report is reviewed on an ongoing basis by our Internal Audit function. To further strengthen the credibility and reliability of the Report, we have also sought independent, external assurance for several Key Performance Indicators, including our carbon footprint, our total energy use, and waste generation. The results of this engagement can be found in the external assurance statement (page 63). Any restatements of information, along with reasons for this, will be clearly reported in the relevant sections.

For any enquiries, comments or recommendations about the Report or any other issues pertaining to Kingspan's approach to sustainability, please contact us at planetpassionate@kingspan.com

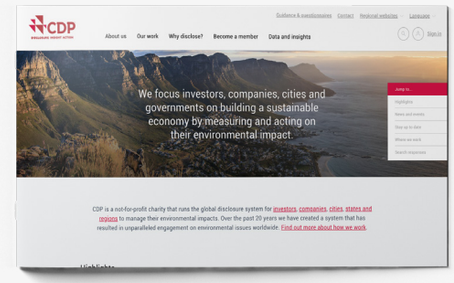
Additional publications



Planet Passionate Report 2022 - Summary
The Report summary presents key data and highlights and is available in 4 languages:
English | French | German | Spanish



Planet Passionate Communities
We are Planet Passionate magazine
Our Planet Passionate partnerships and Planet Passionate Communities magazine is available here.



CDP Questionnaire 2022
Our latest CDP submission is available on our website. It includes detailed information on our climate risk management.



Annual Report 2022
Our 2022 Annual Report is available here.

A message from our CEO

Reflecting on this past year, I am delighted to see our Planet Passionate programme evolving and maturing.

I am very pleased to introduce our third Planet Passionate Report which covers our progress and achievements in 2022. This past year the world faced a series of complex, interlinking crises, and challenges that, in tandem with the worsening impacts of climate change, pose an existential threat to our way of living. It was another record-breaking year for the climate, the fifth warmest on record, with global CO_2 emissions continuing to rise. As a society, we know that we are not doing enough to address the urgent global environmental and social challenges that we all face. We must all double down on our efforts if we are to stay within a chance of limiting global temperature rise to 1.5ºC by the end of this century.

Rapidly reducing greenhouse gas emissions in both new and existing buildings is an important element of addressing the climate crisis, as the built environment represents approximately 39% of global energy-related carbon dioxide emissions. Our business model is structured around the manufacturing and supply of high-performance, energy-saving systems and solutions that support the decarbonisation of the built environment. In 2022, our insulation products sold globally were estimated to save 173 million tonnes of CO_2e over their lifetime.

Reducing the environmental impacts of our key products whilst maintaining their high-performance is a key priority for us. Throughout 2022, we collaborated with our suppliers to find short- and medium-term solutions to help realise this goal. This has enabled us to bring our new, reduced embodied carbon QuadCore LEC insulated panel range to the UK and Irish markets in Q1 2023. We are also subscribing to EcoVadis, a sustainability rating platform, which will help us promote transparency, reduce risk and identify areas for improvement across our supplier base.

Reflecting on this past year, I am delighted to see our Planet Passionate programme evolving and maturing. We completed over 100 Planet Passionate projects across our global operations, including 18 new PV installations in 13 countries, reduced our GHG emissions by 26% (from 2020 base year) and experienced a decrease in our GHG intensity by 36% compared to the previous year. We also finalised preparations for the implementation of our €70 per tonne of CO_2e internal carbon charge which came into effect in January 2023. We also reduced our waste to landfill by 37% from prior year and increased our rainwater harvesting capacity by 58% through the addition of new systems in 9 countries.

Our Planet Passionate Communities programme continues to expand, supporting a broad range of local community environmental and wellbeing projects. The progress we have made thanks to the efforts of our teams across our business was inspiring, and I invite you to have a closer look at our projects and performance for 2022 in the following pages of this Report. We understand that we still have a lot of work to do to meet our goals and we must remain vigilant, but I am confident that our talented and passionate teams across our business will do their utmost to help Kingspan play an enabling role in the transition to a net-zero emissions built environment.

Gene M. Murtagh
CEO, Kingspan Group plc



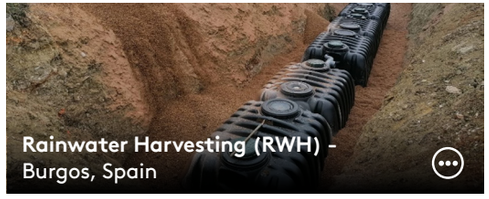
Reducing the environmental impacts of our key products whilst maintaining their high performance is a key priority for us.

Gene M. Murtagh,
CEO, Kingspan Group plc

The year in review

QUARTER 01







QUARTER 02

DERBIGUM®

Acquisition





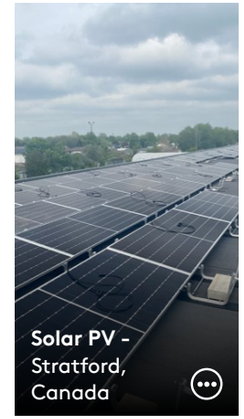
ecovadis

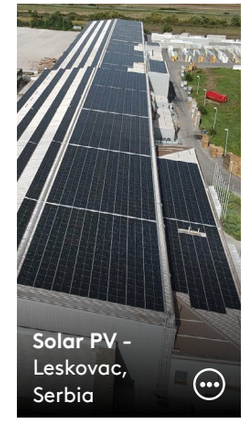
Launch

QUARTER 03

ZERO WASTE INTERNATIONAL ALLIANCE
working towards a world without waste

Araquari, Brazil
Zero waste certification

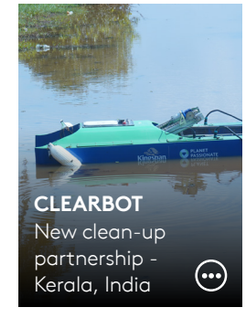




PRIMAGAZ

BioLPG -
Belgium

QUARTER 04

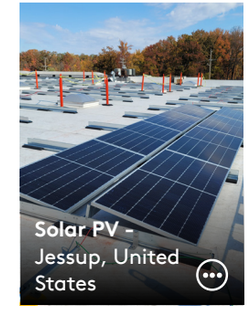


SIEMENS
Ingenuity for life

Energy efficiency
project kick-off

Ondura
Protection above all

Acquisition



Our ratings

CDP

We received an A- score for our 2022 CDP Climate Change submission.

ecovadis

Business units within the Group have achieved Bronze, Silver and Gold ratings from EcoVadis. We aim to improve and increase the coverage of ratings across the Group.

MSCI

Our Group has been rated as AA in the MSCI ESG rating.

SUSTAINALYTICS

We have been rated as low risk, with an overall ESG score of 17.1 and a relative industry position of 10/143.

ISS ESG

Our Group has been rated as B- for corporate ESG performance by ISS ESG.

Kingspan - Who we are

Kingspan at a glance

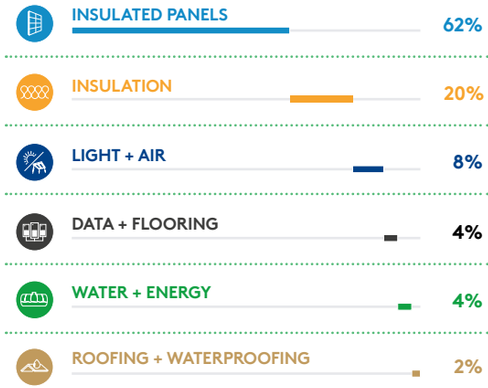
Our mission
To accelerate a net-zero emissions future built environment with the wellbeing of people and planet at its heart.

Founded and headquartered in Kingscourt, Co. Cavan, Ireland, Kingspan is a global business operating in over 80 countries and with over 22,000 employees.

Kingspan has six operating divisions: Insulated Panels, Insulation, Water + Energy, Data + Flooring, Light + Air and Roofing + Waterproofing. Our business model and strategic pillars enable the ongoing conversion to ultra-efficient building envelopes, from outdated, inefficient methods of construction. Through our continuous development of innovative and proprietary technology, we have created a portfolio of products which create value across a number of key metrics. Critically, through the differentiated thermal performance of our innovative solutions, we help design teams, architects and ultimately our customers play their part in tackling climate change. The construction and operation of buildings together account for approximately 36% of global energy use and 39% of energy related CO_2 emissions when upstream power generation is included. Action, at scale, is urgently needed.

Our culture and values:
The business has been built on trust in the integrity of our people and our offering. We value this trust and recognise it as being fundamental to our ongoing success. We are entrepreneurial, collaborative, honest, and we stand behind a common cause – better buildings for a better world. We are innovative. We are the market leader in the field of high-performance building envelope solutions, which enable lifetime carbon and resource savings. We think long-term. The strategy of the business is driven by long-term ambitions and not by quarterly performance. The success of this strategy can be seen in our long-term growth. This ethos is apparent in our multi-year commitments such as our 10-year Planet Passionate programme, which will drive real, positive, impact for the environment and forms a common goal across the business globally.

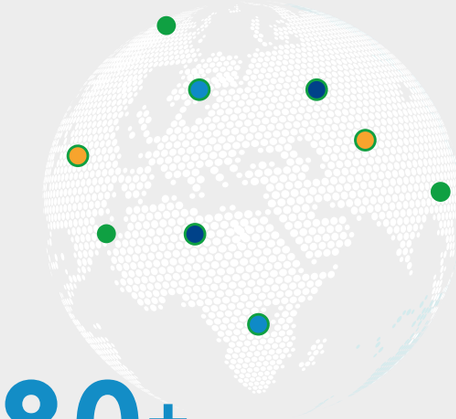
6 Divisions



Note: Divisional breakdown based on product sales.

Employees
22,000+

Revenue
€8.3bn
+28% Year on year

Countries

80+

Trading Profit
€833m
+10% Year on year

Manufacturing, assembly and R&D sites
212
+14 Year on year

Investment in Innovation
€60.3m
+47% Year on year

We are Kingspan -
We are Planet Passionate

Our vision can only be achieved with the dedication, hard-work and ambition of our colleagues across the globe. To every colleague who has contributed to the Planet Passionate journey to date – thank you!

Acquisitions and integration of new businesses:
Acquisitive growth is an important element of Kingspan's development strategy. Acquisitions, all of which align with our strategic criteria, undergo extensive integration procedures and are closely monitored for performance post-acquisition. This extends to our Planet Passionate programme; all acquisitions are expected to help us meet our ambitious targets. At the same time, acquiring new businesses has a material impact on our Planet Passionate performance. To allow for a more meaningful comparison and assessment of our progress, we are reporting on our Planet Passionate progress against targets for both our underlying business (the business from our 2020 base year plus organic growth) and whole business (underlying business plus acquisitions).

Key companies that joined the Kingspan family in 2022:

Ondura

Ondura, headquartered in France, is a leading global provider of roofing membrane and associated roofing solutions with 14 manufacturing sites and a distribution network in 100 countries worldwide.

Manufacturing Sites: **14**

Derbigum

Derbigum, the international premium waterproofing membrane producer with its unique "No Roof to Waste" offering joined Kingspan in Q2 2022.

Manufacturing Sites: **1**

How we create value

Our mission is to help accelerate a net-zero emissions future built environment with the wellbeing of people and planet at its heart.

Our Strategic Goals

INNOVATION PLANET PASSIONATE GLOBAL COMPLETING THE ENVELOPE

Learn more about our Strategic Goals

Key inputs

Key raw materials categories:

- METALS
- CHEMICALS
- MINERAL FIBRE

212 sites

In 2022, we operated in 212 manufacturing, assembly and R&D sites

Energy use

Electricity

Fuels

Employees

male female

Business activities

Completing the envelope

We believe buildings should:

- **Conserve energy and reduce GHG emissions**
- **Harness the power of the natural environment**
- **Generate their own renewable resources**

Sustainably innovating

Innovative solutions that help to reduce operational and embodied GHG emissions



Main outputs

Learn More

1. **Insulated Panels**
   - Insulated panel building envelopes
   - PowerPanel™
2. **Insulation**
   - Insulation boards
   - Piping and ducting insulation
3. **Light + Air**
   - Daylighting solutions
   - Natural ventilation
   - Smoke management solutions
4. **Data + Flooring**
   - Raised access flooring and data centre airflow management systems
5. **Water + Energy**
   - Water preservation and protection solutions
   - Energy management solutions
6. **Roofing + Waterproofing**
   - Roof membranes and roofing components
   - Single component membrane solutions and combined systems

Key outcomes

Carbon

173m tCO₂e
Estimated lifetime carbon savings from insulated systems sold in 2022

7.7m tCO₂e
Kingspan's 2022 value chain carbon footprint

Natural light

9bn lumens
The capacity to create 9 billion lumens of natural light annually through our daylighting systems sold in 2022

1m
Enough to light up 1 million homes[1]

Water conservation

48bn litres
Over 48 billion litres of rainwater could be harvested by our tanks produced in 2022[2]

600m
Enough to fill over 600 million baths

Circularity

803m
In 2022 alone we recycled 803 million waste plastic bottles [3]

1,000
Enough to fill nearly 1,000 football pitches

[1] Assumes 10 x 60W bulbs per home
[2] Assumes a 20 year product life
[3] Equivalent no. of PET bottles by weight

Our approach to sustainability

For us it is clear; we must continue to decouple our business growth from negative environmental impacts.

We must meet the needs of the present while leaving the world a better place for future generations.

Doing business across the world comes with important responsibilities that extend beyond running a profitable business. As we face unprecedented environmental and social challenges, we must all scale-up our actions to ensure that we thrive within planetary boundaries and become a more just society in the process.

The built environment has an important role to play in combating both climate change and environmental degradation, and we pledge to play our part. In practice, this means addressing our most material impacts at pace. Our scope spans across our value chain 'from raw materials to end of product use'. This value chain includes many forms of capital, from the vital natural resources needed to manufacture our products, through to the financial capital raised from the sale of these products.

We must also continue to innovate and enhance the environmental performance of our products to help support the urgent acceleration of net-zero carbon buildings, both new and existing at scale. Achieving real and lasting change is only possible through the collective efforts of everyone who works at Kingspan, our partners and suppliers, NGOs, governments, local communities and other stakeholders.

SUSTAINABLE DEVELOPMENT GOALS

Supporting the SDGs

Kingspan aims to support the Sustainable Development Goals (SDGs) through our constant development of solutions which enable building owners to consume less resources. We do this whilst also driving our Planet Passionate vision which aims to advance our environmental performance across the areas of carbon, energy, circularity and water.

Throughout this Report we demonstrate how our initiatives, and the progress we made in 2022, contributed to the SDGs that are most closely related to our activities and business model.

SDGs that are most closely linked to Kingspan's operations:



PLANET PASSIONATE

Addressing our impacts

To address our most material environmental impacts, we have designed and developed several strategies, policies, targets and action plans. Our efforts are spearheaded by our 10-year sustainability programme, Planet Passionate (for more on the programme, see page 29). As our business grows, we aim to better identify, assess, measure and address any material negative impacts for additional environmental topics, including biodiversity and pollution.

Through Planet Passionate Communities, the societal and philanthropic arm of Planet Passionate, we are also expanding our efforts to create value to society and to local communities where we operate. For more information, see page 45.

Finally, our organisational structure and strategy is pivotal in how we manage our environmental and social impacts, including impacts from our supply chain. For more information on governance topics, see page 12.

Partnerships and initiatives

We recognise that addressing the economic, social and environmental challenges facing our planet today will require massive mobilisation of resources, expertise and knowledge on a global scale. Thus, progress can only be achieved via harmonious cooperation between sectors, stakeholders and the creation of strategic multi-stakeholder partnerships, charters and voluntary initiatives. With this realisation and to advance our sustainability agenda, we endorse and maintain membership of a wide range of organisations, associations and initiatives, including:

RACE TO ZERO | ELLEN MACARTHUR FOUNDATION Member | RE 100

TCFD | SCIENCE BASED TARGETS | BUSINESS AMBITION FOR 1.5°C

materialsCAN Carbon Action Network | EC3 | mindful MATERIALS

EA European Alliance | EuroACE | RENOVATE EUROPE

renewi | WCEF | NewHorizon

World Green Building Council:

Launched in 2016, Advancing Net Zero is the World Green Building Council's (WorldGBC) global programme that works with national Green Building Councils to develop tools and resources to build industry capacity to deliver net-zero carbon buildings.

In 2020, Kingspan became an official programme partner of this ambitious campaign. Improving energy efficiency and performance in buildings is an essential component of the Advancing Net Zero's Whole Life Carbon vision, which aims for all new buildings to operate at net zero emissions by 2030, with a 40% reduction in embodied carbon, and both new and existing buildings to operate at net zero by 2050, with net zero embodied emissions.

We are committed to promoting an energy efficiency first approach and supporting the industry's development of innovative solutions towards decarbonisation. We appreciate that this requires systemic change in the way products are manufactured, used and transported around the world, as well as inspiring others to take action and collectively working to remove implementation barriers.

Kingspan is also a signatory to the WorldGBC's Net Zero Carbon Buildings Commitment. The Commitment challenges signatories to achieve net-zero on all operational emissions for their building portfolio by 2030 and advocates for all buildings globally to achieve net-zero emissions by 2050.

Learn More

Born Free Foundation

Born Free's mission is to stop the exploitation and suffering of individual animals living in captivity or in the wild. It promotes Compassionate Conservation which strives to enhance the survival of threatened species in the wild, protect natural habitats, and support communities living alongside wildlife, while respecting the needs and safeguarding the welfare of individual animals.

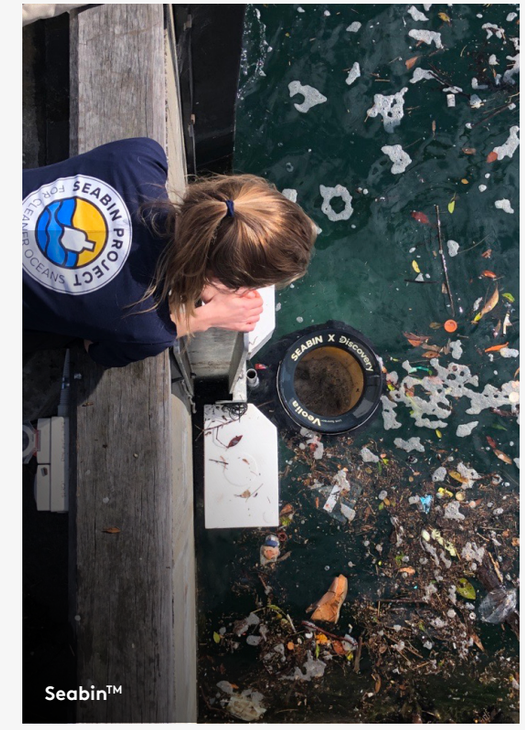


Born Free Foundation

Learn More

Seabin™

Seabin™ is an Australian founded clean tech start-up that has developed an innovative hardware unit and Ocean Health Data Platform. This involves the removal and data cataloguing of plastics and other marine debris from waterways.



Seabin™

Learn More

Governance



Corporate governance

We are committed to ensuring that our long-term ambitions go hand in hand with high standards of corporate governance, as well as a Board equipped with an abundance of experience and expertise.

The Kingspan Board recognises that the values, integrity and behaviours that shape our culture and corporate governance are the foundation of long-term success.

Internal control

The Board of Directors has overall responsibility for the Group's system of internal control and has delegated responsibility for the implementation of this system to executive management. This delegation ensures the embedding of the system of internal control throughout the Group's operations and ensures that the organisation is capable of responding quickly to evolving business risks, and that significant internal control issues, should they arise, are reported quickly to appropriate levels of management. Such a system of internal control, by its nature, is designed to manage rather than eliminate the risk of failure to achieve business objectives, and can provide reasonable, but not absolute, assurance against material misstatement or loss. For more information, please visit our website.



Code of conduct

Kingspan expects the highest standards of integrity, honesty and compliance with the law from our employees, our directors and our partners globally. We actively encourage our employees to speak out if they experience instances that are not in keeping with the principles outlined in our Code of Conduct. Over 95% of Kingspan employees have completed online training on our updated Code of Conduct since its launch in 2021. Our business success is inextricably linked to our behaviours, and our aspiration is to maintain a culture where our everyday actions are built on five core principles:

- **Clear, ethical and honest behaviours and communications.**
- **Compliance with the law.**
- **Respect for the safety and wellbeing of colleagues.**
- **Protection of our Group assets.**
- **Upholding our commitment to a more sustainable future.**

Learn more about our Board and Board-level committees

Anti-bribery and corruption

Our Anti-bribery and Corruption Policy outlines the principles we adhere to, to ensure we comply with anti-bribery and corruption laws in every jurisdiction in which we operate. Any violation could subject Kingspan, its directors and employees to severe penalties, including fines and imprisonment, and could be very damaging to Kingspan's business and its reputation.

"Kingspan's approach to bribery and corruption is very simple. Kingspan maintains a zero tolerance policy towards bribery and it is prohibited in any form. It is essential that Kingspan conducts its business fairly, honestly and openly both on a domestic and international basis."

Gene M. Murtagh
CEO, Kingspan Group plc

Our Code of Conduct is available here.

Our Anti-bribery and Corruption Policy is available here.

Sustainability governance

Our Chief Executive Officer (CEO) is responsible for sustainability related issues. This responsibility has been embedded at the top of the chain of command to ensure sustainability related issues are considered when reviewing and guiding strategy, major plans of action, risk management policies, annual budgets, business plans and assessing progress against goals and targets.

The CEO is supported in this role by the Executive Directors who are responsible for ensuring that issues are monitored at divisional level and that any significant issues are reported back to the Board at the bi-monthly Board meetings.

Management oversight

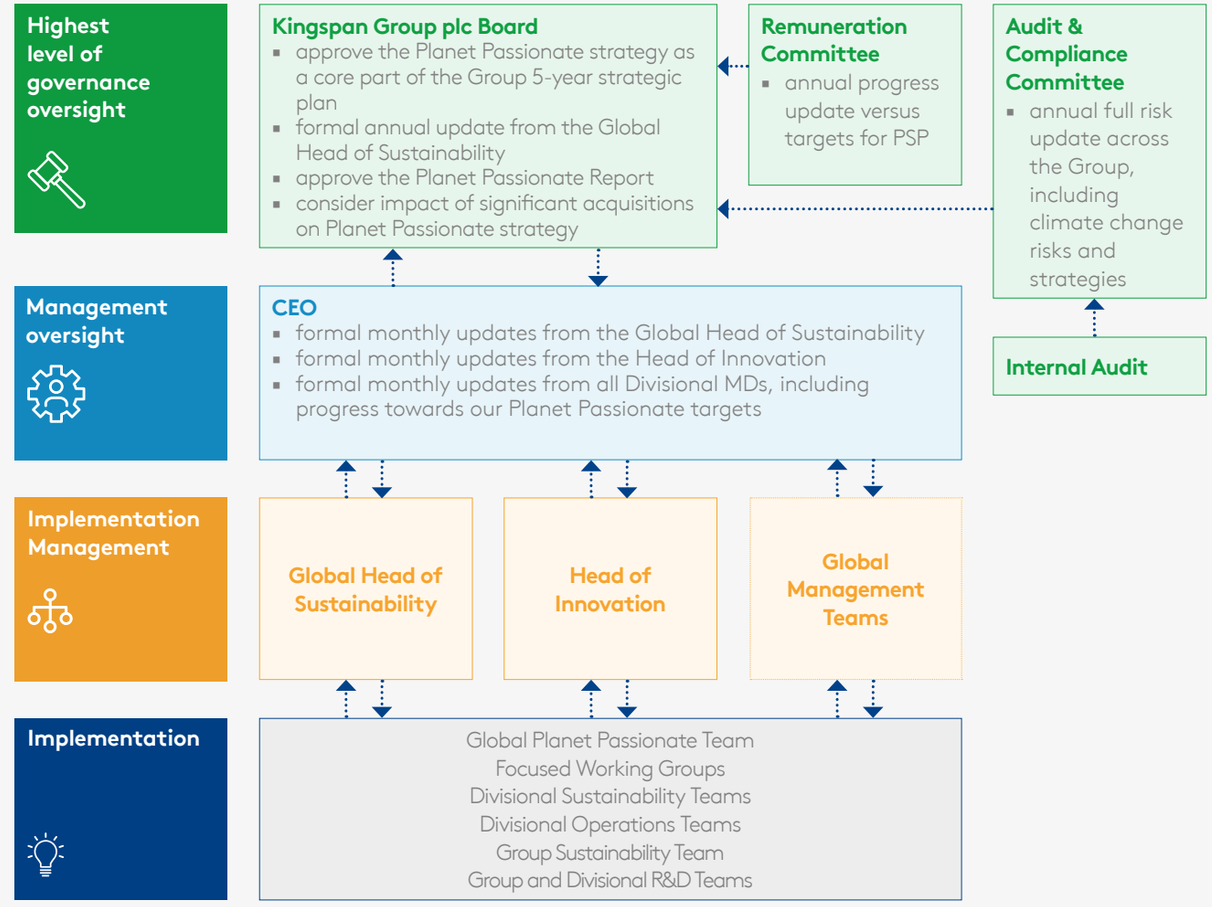
Kingspan is currently broken into ten operating businesses. Managing directors within each business unit at global, regional and local level have sustainability objectives linked to their function to support the delivery of our Planet Passionate agenda. Each of these operating businesses are reviewed monthly by the senior management teams across each division, with at least two executive directors, including the CEO. These senior teams have representatives including managing directors, finance, technical, operational and commercial directors. At these business reviews, risks and opportunities that are assessed as significant can be brought to the attention of the executive directors and are assessed on a division wide, and potentially Group-wide basis.

Sustainability structure

In 2019, Kingspan appointed a Global Head of Sustainability, reporting directly to the CEO and to the Group Board annually on progress against our Planet Passionate objectives. The Global Head of Sustainability is responsible for the development, management and oversight of key environmental initiatives across the global business. The Group Sustainability team reports to the Global Head of Sustainability along with the Group Planet Passionate team which consists of 15 representatives from across the business units.

The Planet Passionate divisional representatives are responsible for driving the sustainability strategy across their division, and management of the divisional level Planet Passionate team.

Sustainability oversight & management



Responsible supply chain

In 2022, we adopted and published our Group Supplier Policy to clearly communicate our sustainability requirements as we continue to expand our supply chain sustainability programme.

Kingspan continues to develop its ethical and environmental strategy for procuring materials and services. We seek to build and maintain long term relationships with key suppliers and contractors to ensure that they are aligned to the same goals and standards as Kingspan, to address strategic global issues, emerging trends and ultimately our customer needs.

This approach, which has divisional and regional variances based on the local requirements and materials, is continually evolving to align with core social, ethical and environmental standards. In all cases, we aim to foster an environment of collaboration. In 2022, we adopted and published our Group Supplier Policy which sets out our expectations of suppliers in relation to:

- **business practices and integrity**
- **ethical employment practices**
- **anti-bribery and corruption**
- **environmental responsibility**

Our procurement teams are working in conjunction with our key supplier base on the deployment of the policy as part of our wider supplier engagement and collaboration efforts.

EcoVadis

In late 2021, Kingspan subscribed to EcoVadis. The EcoVadis sustainability management platform will help us to monitor and track our suppliers' ESG performance, promote transparency, reduce risk and identify areas for improvement.

EcoVadis is a sustainability rating platform which assesses a company supply chain network under environmental, ethics, labour and human rights, and sustainable procurement criteria. The outcome of the assessment process is a company scorecard which provides an overall ESG performance rating of the supplier.

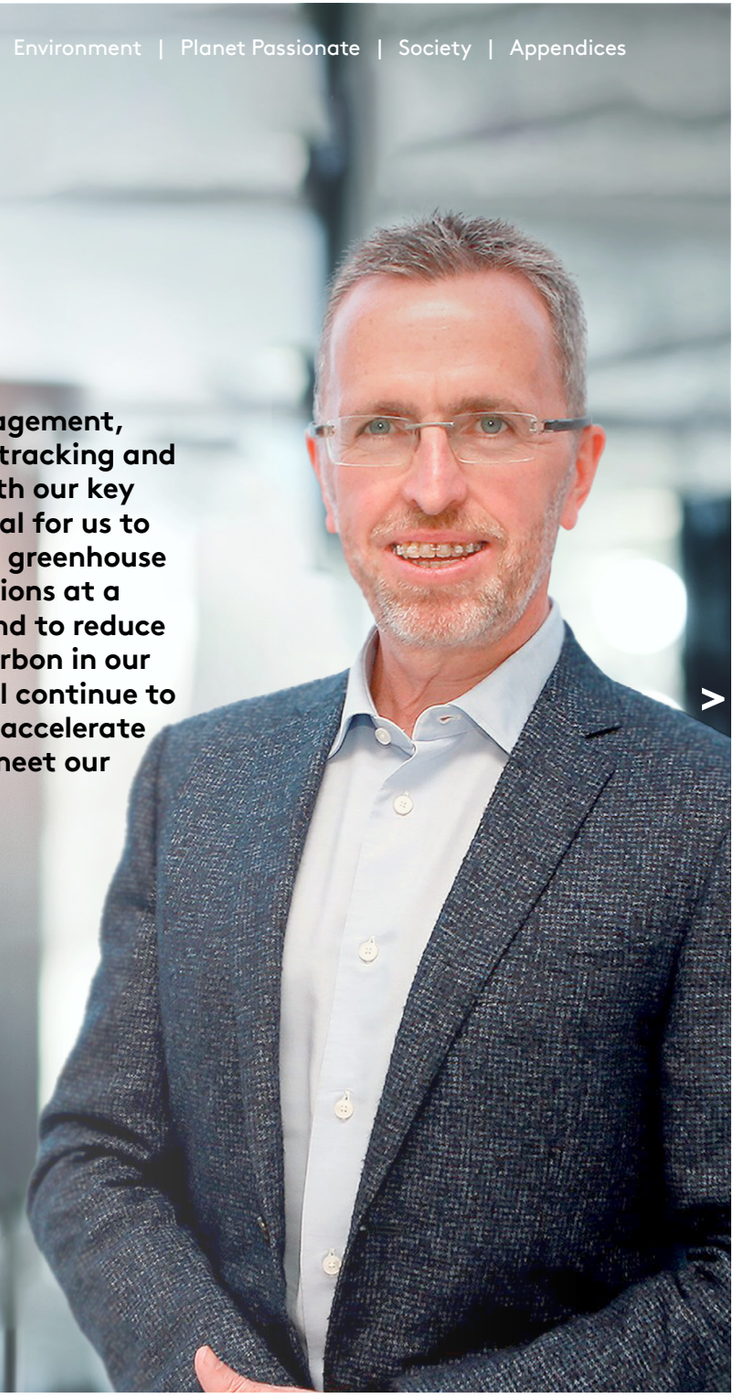
In 2022, we began the roll out of the EcoVadis questionnaire to our key supplier base across the business. To date we have received scorecards that cover 41% of our supply base by group spend and we are actively working to increase our coverage in 2023.

Annual Supplier Forum

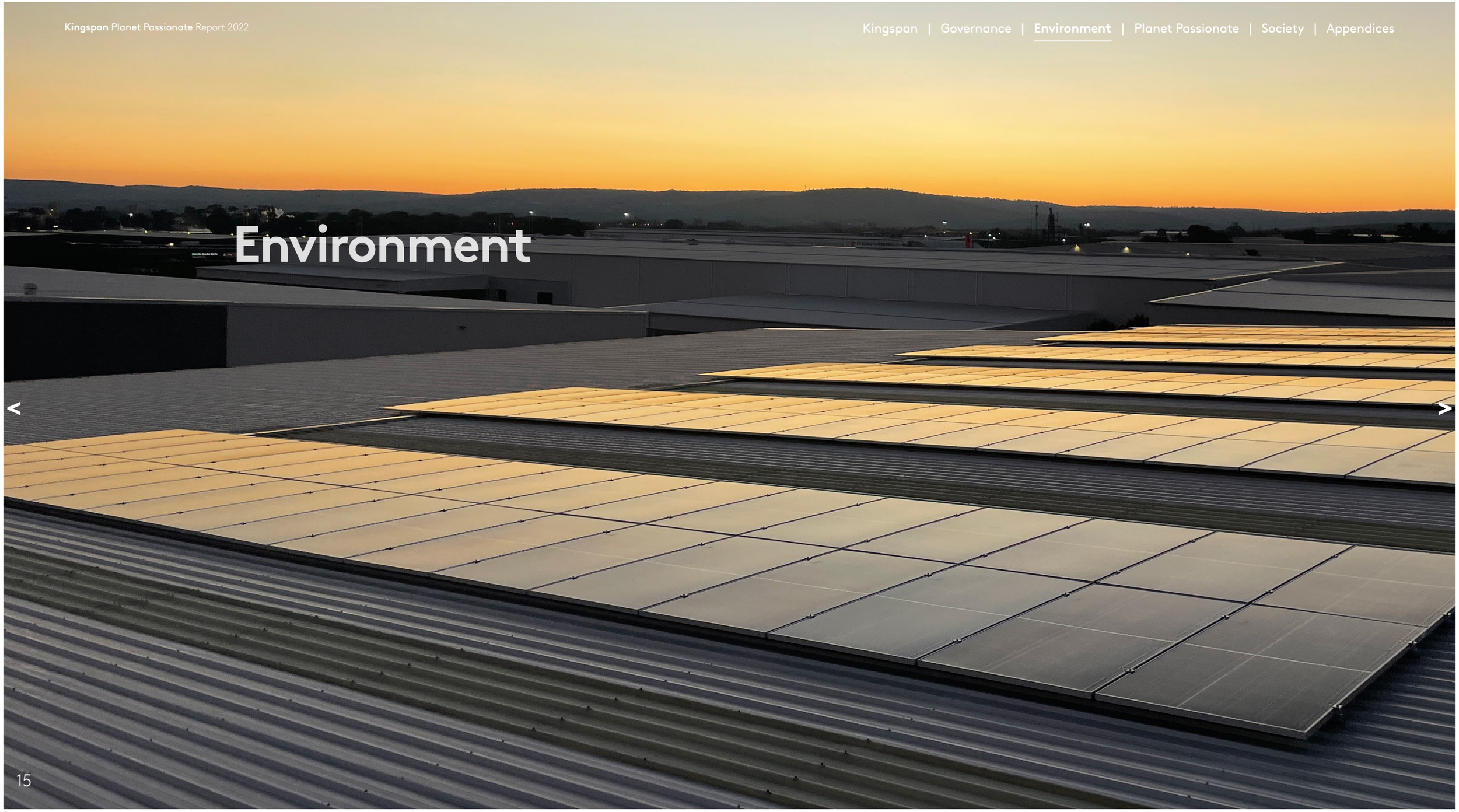
In November 2022, we held our annual Supplier Forum with specific focus given to sustainability and updating our suppliers on how we are progressing towards our targets. Productive discussions and workshops were held with a range of suppliers, resulting in collaborative projects that will support the delivery of our target for a 50% reduction in product CO_2e intensity from our primary supply partners by 2030, and our verified science-based scope 3 target. We continue to build our supplier relationships and engagement strategy moving forward.

"Continuous engagement, annual progress tracking and collaboration with our key suppliers is critical for us to achieve absolute greenhouse emissions reductions at a company level and to reduce the embodied carbon in our products. We will continue to push forward to accelerate our progress to meet our 2030 targets."

Mark Broderick
Procurement Director
Insulated Panels West



Environment



Carbon and energy - Introduction

Climate change, including more frequent and acute extreme events, has adversely impacted nature, people's lives, and infrastructure across the globe. These impacts and the resulting damages not only impede the progress to meet the Sustainable Development Goals (SDGs) but can also restrict efforts to meet basic human needs.

Even though urgent action is needed to limit global temperature rise to 1.5°C above pre-industrial levels, set out in the Paris Agreement, the transition to a net-zero world has been delayed by a series of crises and conflicts, including the war in Ukraine and the COVID-19 pandemic. Governments and businesses that are recovering at a slower rate are more likely to scale back or avoid action; post COVID-19 recovery measures often prioritise short-term stability over sustainable transition. In addition, the latest Nationally Determined Contributions (NDCs) fall short of the 1.5°C goal. Under the current trajectory, greenhouse gas emissions are projected to increase by almost 14% over the next decade.

Climate change and energy

Energy is closely linked with climate change, as non-renewable energy production greatly contributes to global warming. As a result, energy must be a central focus of the climate action agenda to achieve net-zero emissions by 2050. Even though so much depends on sustainable, accessible and affordable energy systems, current levels of ambition remain well below a net-zero emissions trajectory by 2050.

Climate action urgency

To prevent irreversible consequences and avert a climate catastrophe, immediate and stronger action is needed across all sectors. Achieving absolute emissions reductions must be the pillar of all mitigation efforts globally.

Buildings and construction are responsible for 39% of energy-related carbon dioxide (CO_2) emissions globally, a fact that highlights the importance of the sector in the transition to a net-zero emission pathway.

Our company mission is to help accelerate a net-zero emissions future built environment, with the wellbeing of people and planet at its heart. Climate change risks and opportunities are deeply embedded in our strategy, R&D investment, products, and business model. Kingspan's core strategy is structured around the manufacture and delivery of a wide range of high-performance, energy and resource efficiency solutions.

Concurrently, we continue our efforts to increase energy efficiency, our direct use of renewable energy and on-site generation. We are on a journey to decouple our growth from fossil fuels, while improving our energy security and resilience against price fluctuations.

We take our role seriously in the fight against climate change and the largest impact we can have is to help enable the decarbonisation of both new and existing buildings around the world.

14%

Under the current trajectory, greenhouse gas emissions are projected to increase by almost 14% over the next decade



Wind turbine, Holywell, UK

Carbon and energy - Our strategy

Existing buildings and construction are responsible for 39% of annual energy-related carbon dioxide (CO_2) emissions globally. With global building floor area expected to double by 2060, our industry is uniquely placed to support the transition to zero carbon, resilient and inclusive society. At Kingspan, we aim to contribute to a net-zero carbon built-environment by minimising our climate-related impacts across our value chain, and offering lower embodied carbon, high-performance systems and solutions.

Our climate strategy

Minimise our environmental impacts across our value chain



Lower embodied carbon raw materials
Procuring lower embodied carbon raw materials is a key part of our strategy, as it will enable us to offer lower embodied carbon products to our customers, and reduce our scope 3 GHG emissions.

Net-zero carbon manufacturing by 2030
We are also aiming to achieve net-zero carbon in our manufacturing operations and have committed to a 90% absolute reduction in scope 1 & 2 GHG emissions by 2030.

90%

Absolute reduction in scope 1 & 2 GHG emissions by 2030

Offer lower embodied carbon, high-performance solutions



Investing in R&D is a fundamental aspect of our business model (€60.3m in 2022) as it enables us to continually enhance Kingspan's position as a market leader in energy and resource efficient systems and solutions. We are actively working on a wide-range of projects that will deliver even more value, and support our customers to reduce emissions from their buildings.

€60.3m

Investment in R&D in 2022, driving Kingspan's position as a market leader

2022 impact



The estimated lifetime carbon savings of our insulation systems sold in 2022 are expected to be more than 22 times higher than our 2022 value chain carbon footprint.

173m tCO_2e

Estimated lifetime carbon savings from insulation systems sold in 2022

7.7m tCO_2e

Kingspan 2022 value chain carbon footprint

Carbon and energy – Our decarbonisation strategy

We have set ambitious Scope 1, 2 and 3 GHG emission reductions targets aligned with a 1.5 degree future. In 2022, we achieved a 26% reduction in our Scope 1 & 2 GHG emissions from our base year, through energy efficiency projects, an increase in renewable electricity consumption and a reduction in the use of 95% of our value chain carbon impact is within Scope 3 GHG emissions, which include our indirect emissions from our raw materials. The decarbonisation of these materials is essential to achieving the large-scale reductions required to meet our 2030 targets.

As we acquire new businesses, we intend to bring them along this journey of decarbonisation

Scope 1&2 GHG emissions (tCO_2e)

Scope 3 GHG emissions (tCO_2e)

*for further detailed breakdown of the Scope 3 emissions, see Appendix 2.

Scope 1 & 2

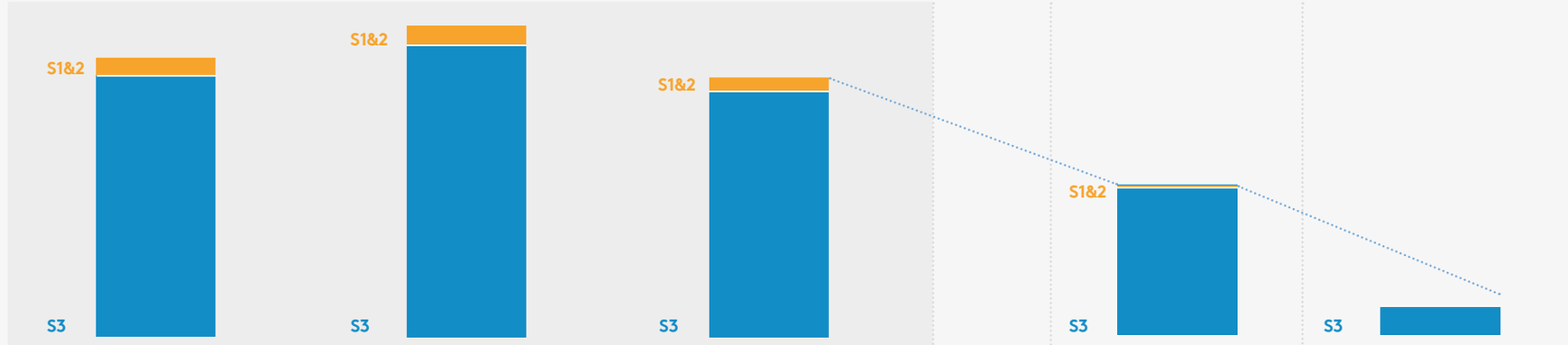
SBTi
Absolute reduction in Scope 1 & 2 GHG emissions **90%**

Planet Passionate
Net Zero Carbon Manufacturing

Scope 3

Planet Passionate
Reduction in primary raw material intensity **50%**

SBTi
Absolute reduction in scope 3 value chain GHG emissions **42%**



Emission reductions from base year

- Continuous energy efficiency measures
- Renewable Fuels
- Renewable Electricity Purchased & Generated
- Removal of high GWP blowing agent

S1 & S2

The change in Scope 3 emissions is due to a switch to more specific calculation methods, market fluctuations and supplier engagement minimal*

Scope 3

- Further emission reductions ⊕ S1 & S2
- Raw material decarbonisation — Scope 3

From 2030, our decarbonisation journey will continue through further reduction of our Scope 3 emissions

Scope 3

Carbon and energy - Our management approach

Risk management

Climate change risks and opportunities are managed through a multi-disciplinary, company-wide, risk management process. We are using the recommendations and guidance from the Task Force on Climate-Related Financial Disclosures (TCFD) to not only assess climate-related risks and opportunities, but to also use scenario analysis that help us manage our strategy resilience. Various risk types are included in our climate-related risk assessment, including current and emerging regulation, technology, and market. Availability and further development of lower emission products was both a significant climate risk and opportunity for our business, highlighting once more why the offering of lower embodied carbon, high-performance solutions is an integral part of our business model. For more information on our TCFD disclosures, including more information on our risk management process and our key risks and opportunities please see page 56.

Our top 3 climate-related risks

Technology



Substitution of existing products and services with lower emission options

Market



Changing customer behaviour

Emerging regulation



Carbon pricing mechanisms

Our top 3 climate-related opportunities

Market



Use of public sector incentives

Products & services



Development and/ or expansion of low emission goods and services

Market



Access to new markets

SCIENCE BASED TARGETS

Tracking and disclosure

We have endeavoured to develop and maintain robust tracking and reporting procedures across our Group and build our climate strategy on clear, consistent, and auditable data. Our scope 3 GHG emissions include all applicable categories, regardless of their materiality to our overall footprint. We disclose GHG emissions data over time, whilst also performing recalculations when the reporting boundary changes in a material way, to allow for meaningful comparisons. Please see 32, for our detailed carbon footprint and page 58 for our external assurance statement.



Targets

Our climate ambition is aligned with a 1.5°C trajectory and places increased emphasis on emission reductions over offsetting (please see "Carbon credits and offsetting" for more information on offsets). Attesting to this fact are our science-based targets which were approved by the Science Based Targets initiative (SBTi) in June 2021.

Scope 1&2

Kingspan commits to reduce absolute scope 1 & 2 GHG emissions by **90%** by **2030** from a 2020 base year.*

Scope 3

Kingspan commits to reduce absolute scope 3 GHG emissions from purchased goods and services, use of sold products and end-of-life treatment of sold products **42%** within the same timeframe.

We consider these as interim targets on our journey to net-zero emissions, and we will set a science-based **net-zero emissions** target during **2023**.

* The target boundary includes biogenic emissions and removals from bioenergy feedstocks.

GHG emissions mitigation

We aim to achieve our ambitious emission reduction targets by designing and implementing a wide range of decarbonisation measures across our business.

Internal carbon charge

Starting in January 2023, we will introduce an internal carbon charge across our global business. The starting price will be 70€/tCO_2e (scope 1&2 GHG emissions, excluding process and biogenic emissions) and will be adjusted as required to ensure progress against our targets and any relevant developments in this field. The implementation of the internal carbon charge is an important initiative to accelerate carbon reduction across the business in line with our targets.



Addressing our upstream emissions

As a global leader in high-performance insulation and building envelope solutions, we rely on a global network of suppliers, from raw materials to the transportation companies that deliver our products. We know that to enable real change we must proactively reduce GHG emissions across our value chain. We must find solutions to help address our upstream emissions, in particular, emissions from our purchased goods and services, which account for over 82% of our total value chain emissions.

The majority of our upstream value chain emissions are attributable to three key raw material categories – metals, chemicals and mineral fibre. Reducing the emissions from these categories will in turn allow us to reduce the embodied carbon of some of our key products and help support the delivery of a net-zero carbon built-environment. We manage the embodied carbon of the raw materials we purchase by focusing our efforts around the three following workstreams:

Supplier Engagement:

- We actively engage with our key raw material suppliers on climate change and emission reduction activities with a specific focus on their roadmaps and timelines to reduce the embodied carbon of the raw materials that we purchase from them.
- Throughout 2022, we had bi-weekly internal and external cross functional meetings related to our supply chain decarbonisation strategy.

Data Tracking:

- We collect, collate, and analyse supplier specific data annually to support our scope 3 reporting.
- We track our suppliers' progression against their emission reduction goals and targets annually.

Collaboration:

- We seek to identify areas of opportunity to collaborate and share knowledge, resources and expertise on emission reduction projects with our key suppliers.
- We have successfully developed lower embodied carbon variants of products with the support of our suppliers.

Process emission reductions

Process GHG emissions from the use of foam blowing agents constitute most of our scope 1 GHG emissions, and as such we have placed a special focus on reducing them. We have ongoing mitigation plans in place and aim to continually reduce, substitute, or where possible eliminate the use of high Global Warming Potential (GWP) blowing agents.

70€/tCO_2e

Internal carbon charge starting January 2023

Energy efficiency

Energy efficiency is a well-established discipline embedded in our Group. Investment in energy efficiency projects not only helps reduce our carbon footprint, but also results in financial savings. Our divisions are investing in a plethora of energy efficiency solutions, including lighting, refurbishment and/or replacement of equipment and vehicles with more energy efficient models.

"To achieve our ambitious decarbonisation targets, we must embed energy efficiency and the use and generation of renewable energy into the manufacture of our products."

Holly Loughman
Group Sustainability
Programmes Manager
Kingspan Group



Holly Loughman
Group Sustainability
Programmes Manager
Kingspan Group

Net-zero energy

The first leg of our sustainability journey, our Net-Zero Energy initiative, ran from 2010 – 2020 with the aspiration of powering our global business with 100% renewable energy by 2020. Due to the maturity constraints of the global renewable energy market, it was not possible for us to achieve this solely through direct supply of renewable energy and on-site renewable energy generation. In countries and regions where this was not feasible, we purchased and applied unbundled renewable energy certificates (RECs) to cover the balance of non-renewable energy used annually.

Through this programme, we gained valuable knowledge of the energy market, renewable energy instruments and the technological maturity of renewable energy options for fuel-based applications. This knowledge helped us to develop our Planet Passionate renewable energy targets, which we believe are ambitious but achievable by 2030.

Looking forward and following the latest development in climate science, we are shifting our focus to absolute carbon reductions and the direct use of renewable energy. To this end, we are retiring the NZE target from our Planet Passionate programme starting in 2023. At the same time, we're introducing a new powerful tool, an internal carbon price, that will drive investment toward achieving our ambitious carbon target.

Renewable energy

Major investment in renewable energy is needed globally to accelerate the mitigation of GHG emissions and transition to cleaner, affordable and resilient energy systems. A key focus of the Planet Passionate programme is to increase our direct use (energy we consume to manufacture our products) of renewable energy.

While we have made good progress to date, we must continue to scale our ambitions in line with company growth. Being a global manufacturer of a wide range of systems and solutions for the construction sector, our production processes and energy requirements vary greatly across the business. Our renewable energy strategy has two parts – renewable procurement and on-site renewable energy generation.

Renewable energy procurement

In 2022, our energy demand was approximately 62% fuels and 38% electricity. Therefore, to meet our 2030 target of 60% direct renewable energy, we must find viable and scalable renewable electricity and fuel options.

- **Electricity**
  Renewable electricity is becoming more widely available and where possible, we are procuring renewable electricity directly from our utility providers. In 2022, we expanded our procurement of direct renewable electricity in North America and Australia, regions which have previously had limited availability of such electricity products.

- **Fuels**
  Given that the renewable fuels market is not yet as developed as the renewable electricity market, it is more challenging. Nevertheless, we are exploring initiatives that will help us achieve our targets. To this end, we are actively investigating options to purchase certified renewable fuels directly from our utility providers with initial agreements in place to procure biofuels in Ireland and Belgium.

  We are also investigating Power Purchase Agreements (PPAs) for both renewable electricity and fuels, particularly in regions where other renewable energy procurement options are not yet available or do not meet our standards. There are a variety of PPA options available, which we are investigating to determine if they may be suitable to support our targets.

Onsite renewable energy generation

Increasing on-site renewable energy generation capacity at our manufacturing sites is a priority for our business as we seek to increase our energy self-reliance, the use of renewable energy, and reduce both direct GHG emissions and long-term operational costs.

We are deploying options to generate both renewable electricity and heat.

- **Electricity**
  In 2022, we increased our on-site electricity generation capacity by 6.4 GWh, with the installation and expansion of solar PV systems. As we have multiple manufacturing processes, we must assess each site individually and investigate the feasibility of potential on-site electricity generation options based on location, cost and viable technologies.

  During the same year, we further developed our roadmap for on-site generation of renewable heat. Aiming to better understand the viability of renewable heat technologies and how renewable heat markets will evolve in the long-term, we commissioned a study of our global manufacturing portfolio. The results of this study will help us to navigate the nuances of the global energy markets and make informed decisions that will help us to reach our targets.

- **Renewable fuels**
  In 2022, our energy demand was approximately 62% fuels and 38% electricity. This means that to meet our 2030 targets we must find viable and scalable renewable fuel options. Given that the renewable fuels market is not yet as developed as the renewable electricity market, we expect this to be challenging. Nevertheless, we must explore and seek out initiatives that will help us achieve our targets. To this end, we are actively investigating options to purchase certified renewable fuels directly from our utility providers.

Zero emission company cars

As part of the European Green Deal, the EU has committed to put light duty vehicles on a pathway towards zero emission mobility after 2025. To support the acceleration of low carbon transport and our goal to minimise our carbon footprint, we aim to accelerate our company car fleet conversion to zero emissions by 2025.

This means that each year we will convert a percentage of our company cars to zero emissions when due for replacement, ramping up to 100% of replacement cars annually from 2025.

To achieve this target, our strategy is based on:

- **Research & engagement**
  Actively engaging with car manufacturers and leasing companies to understand the availability and suitability of their electric vehicle offering across the countries where we operate.
- **Internal taskforce**
  We formed a multi-functional taskforce to support the implementation of the car target throughout our business. The team includes colleagues from sustainability, operations, finance, HR and procurement. The team meets on a quarterly basis.
- **Infrastructure**
  Investing in EV charging infrastructure across our operations and introducing supporting schemes for our employees to enable at home EV charging.

100%

Zero emissions company funded cars - annual replacement



Carbon credits and offsetting

We follow the most updated guidance and requirements from several authoritative institutions, do not procure carbon credits to count as reductions towards meeting our carbon targets and do not include carbon credits in our carbon disclosures. Our focus is instead on decarbonisation within our operations and value chain. We aim to procure carbon credits towards the end of the decade, but we will only use them to neutralise residual GHG emissions after we have met our science-based absolute GHG emission reduction targets.

We will only procure credible, high-quality carbon credits that will demonstrate and ensure additionality and permanence. Nature-based solutions, such as reforestation, cannot guarantee the permanence needed so we will continue to closely monitor the market and invest in the most suitable solution in the coming years.

Avoided emissions

We calculate the avoided emissions of our products (see page 8) as these metrics demonstrate the positive impacts of our products and showcase our capacity to contribute to more resilient and sustainable infrastructure.

Nevertheless, we do not count these savings towards our targets and do not include them in our carbon footprint. Avoided emissions occur outside of a product's lifecycle and fall under a different accounting system from corporate emission reporting, and therefore should not count as reduction, of a company's GHG inventory.

As an industry leader, we encourage other corporates to avoid using avoided emissions in their headline climate pledges or counting them towards their climate targets. Aligning corporate reporting with scientific and industry consensus will help increase the transparency and reliability of corporate GHG reporting.

As we are progressing towards our decarbonisation goals, we have identified some key challenges that are likely to affect our ability to meet carbon targets. These include but are not limited to:

Challenges

- **Raw materials**
  lower embodied carbon raw material options that can meet the technical performance criteria required to maintain (or enhance) current product performance attributes.
  - Volume supply of lower embodied carbon raw materials that will enable us to make significant progress towards our Planet Passionate and science-based scope 3 targets by 2030.
- **Renewable energy**
  the availability (and cost) of higher quality renewable electricity and fuel procurement options in regions such as North America and Australasia.
- **Technology maturity**
  potential new manufacturing technologies are in their infancy and not proven at scale, and may not be feasible to deploy within the business by 2030.
- **Scope 3 carbon accounting**
  availability of detailed, global standardised frameworks, guidance and case studies for accounting of carbon emission reductions of raw materials.

Our strategies to help tackle these challenges include:

- **Raw materials**
  - continuous supplier engagement including cross departmental meetings, site visits, etc.
  - annual tracking and updating supplier decarbonisation roadmaps as they progress their strategies and supplier specific data is available.
  - early-stage material testing of all potential new raw material options to determine which meet all necessary technical and performance criteria and merit further investigation.
- **Renewable energy**
  - ongoing research and dialogue with our energy providers and consultants to better understand the short and medium-term options that will become available up to 2030.
  - Development of large-scale renewable energy generation projects in key regions such as North America, Poland and Spain.

Our progress, key projects and other relevant KPIs are presented on page 36.



Carbon and energy – Product innovation

One of the overarching goals of our Planet Passionate programme is to further enhance the environmental benefits of our key products. We are focused on reducing the embodied carbon of our key products and bringing new lower embodied carbon production options to market at pace.

Research & Development

IKON is our global innovation centre located in Ireland. It is both a place of research and a living research project where we ask the big questions that will lead us to a more sustainable and healthy future, while delivering enhanced value to our customers.

The IKON R&D function is researching the development of a bio-based insulation board to complement our current range of systems and solutions. We are examining materials that will align to our Planet Passionate goals and will enable us to bring new solutions to market to support tackling the climate crisis. See the Circularity, Lean Design for Circularity section for further detail.

New product development

To help enable low carbon buildings in the future, our sustainability, innovation and procurement teams work collaboratively to find and test lower embodied carbon raw material options that still maintain the product's technical performance attributes (such as thermal performance, strength, etc.).

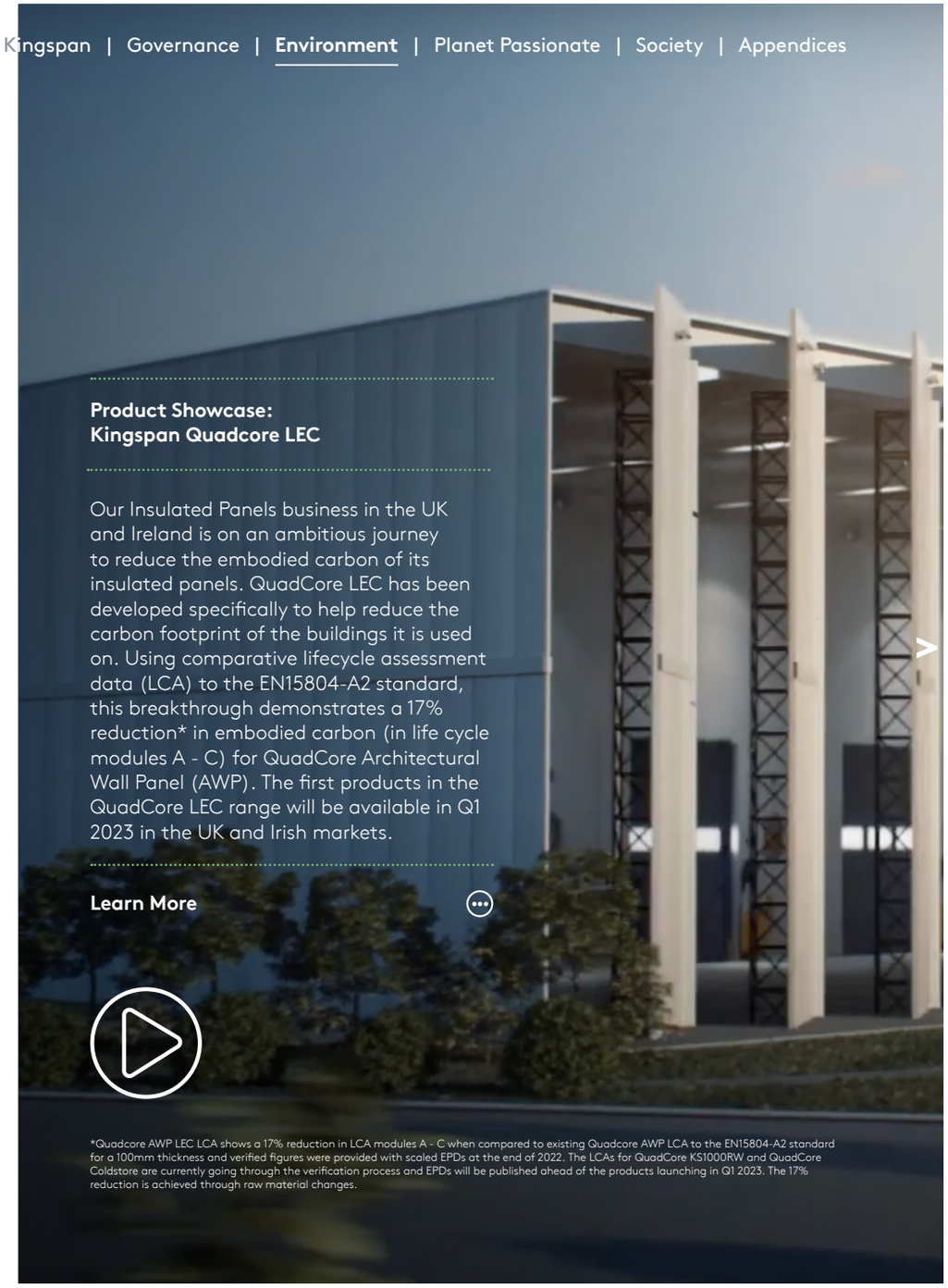
Through our ambitious supply chain targets, we aim to reduce the carbon intensity of our key raw materials by 50% by 2030, and to achieve a 42% absolute reduction in our scope 3 GHG emissions by 2030 from a 2020 baseline. To do this, we engage proactively with our suppliers to further develop our carbon supply reduction roadmap, and to identify lower embodied carbon material sources available today with the potential to increase availability in the medium term. Through our work to date, we have identified several potential new raw material options for steel and chemicals.

These options have the potential to reduce the embodied carbon of our insulation boards, insulated panels, raised access floors and daylighting products. We have several new product development projects underway across the business with the aim of launching new products to the market throughout 2023.

Environmental Product Declarations

Our product embodied carbon impact data is available via our third party verified EN 15804 Environmental Product Declarations (EPDs). This information helps enable whole building level calculations and inform decision making. Our approach to producing EPDs is also being developed to align with the World Green Building Council's (WorldGBC) advancing net-zero roadmap for manufacturers. Kingspan product EPDs are available via the following links:

www.kingspan.com
www.ecoplatform.org
www.greenbooklive.com
www.epd-australasia.com
www.environdec.com



Product Showcase: Kingspan Quadcore LEC

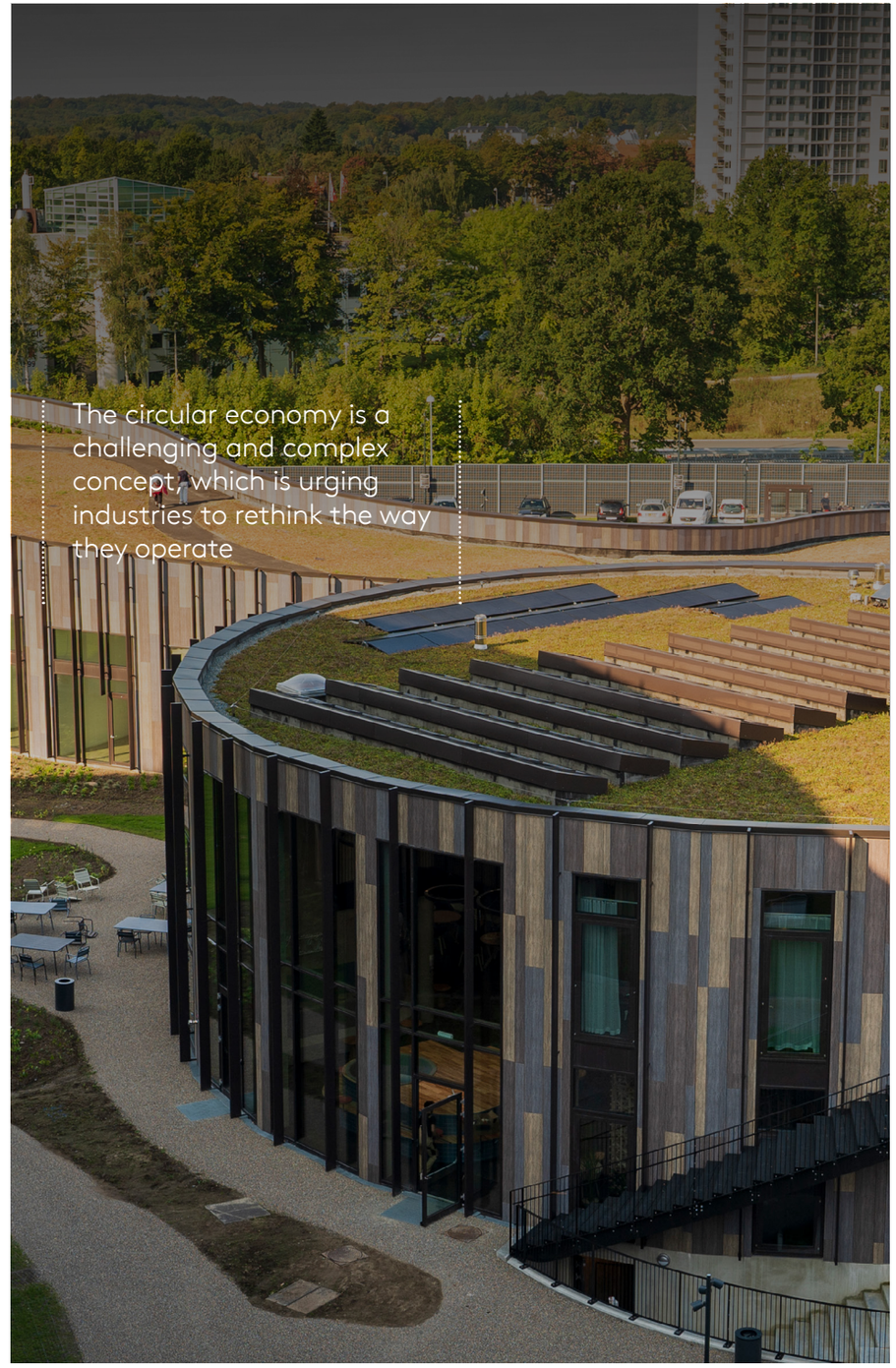
Our Insulated Panels business in the UK and Ireland is on an ambitious journey to reduce the embodied carbon of its insulated panels. QuadCore LEC has been developed specifically to help reduce the carbon footprint of the buildings it is used on. Using comparative lifecycle assessment data (LCA) to the EN15804-A2 standard, this breakthrough demonstrates a 17% reduction* in embodied carbon (in life cycle modules A - C) for QuadCore Architectural Wall Panel (AWP). The first products in the QuadCore LEC range will be available in Q1 2023 in the UK and Irish markets.

Learn More

*Quadcore AWP LEC LCA shows a 17% reduction in LCA modules A - C when compared to existing Quadcore AWP LCA to the EN15804-A2 standard for a 100mm thickness and verified figures were provided with scaled EPDs at the end of 2022. The LCAs for QuadCore KS1000RW and QuadCore Coldstore are currently going through the verification process and EPDs will be published ahead of the products launching in Q1 2023. The 17% reduction is achieved through raw material changes.

Circularity - Introduction

Unsustainable production and consumption methods and models are some of the contributing factors to the triple global crises facing our world today: climate change, pollution and biodiversity loss[1]. Even though we need to limit our dependence on natural resources to relieve some pressure on already burdened and sensitive ecosystems, our reliance on them is increasing; it has risen by over 65% globally from 2000 to 2019[1].



The construction industry is the largest consumer of raw materials, with building and infrastructure accounting for 38.8 billion tonnes annually[2]. With urban areas growing rapidly, the construction sector will continue to have a significant impact – and an important role to play - in how the world's resources are managed and used.

The circular economy offers an alternative solution to the current take-make-waste approach: an economic model based on resource efficiency, waste minimisation and value retention and creation. Ultimately, it promises to decouple economic growth from resource use.

38.8bn

Building and infrastructure accounts for 38.8 billion tonnes of raw materials used annually[2]

In addition to the challenges posed by a linear economy, supply chain disruptions in tandem with increased resource scarcity that in turn leads to price volatility, will ultimately force organisations to rethink and redesign their supply chain models and methods of value creation. It is essential that we keep valuable resources in use for as long as possible and maximise the embedded value of products and materials.

Yet, the circular economy is a challenging and complex concept, which is urging industries to rethink the way they operate. It requires a systemic change; from the way we view materials and design our processes to the way we engage and interact with our key stakeholders and industry.

At Kingspan, we aim to reduce the negative impacts of our materials while also contributing to the transition of the built environment from linear to circular. We are introducing circularity principles and considerations to the way we do business and interact with our stakeholders.

[1]The Sustainable Development Goals Report 2022

[2]World Green Building Council, Annual Report 2020

Circularity -
Our management approach

We aim to help accelerate the transition towards a circular economy within the built environment. As a global product manufacturer, we want to play our part to help embed more circularity practices within our industry. While upcoming policy and legislative frameworks aim to incentivise the transition to a circular economy, the infrastructure to enable this via business models within the built environment - including reuse, refurbishment, and reverse logistics - do not yet exist. This is crucial to enable circularity at scale in our industry. Moving forward, we will actively work with industry partners with the intention of addressing these issues and will continue to adapt our approach as the topic evolves.

We are still at the beginning of our circularity journey, but we are keen to progress the agenda within our business at pace. To transition our business to support a circular economy we aim to embed circularity principles at every level of our organisation. To this end, in 2021 we established our Group Circular Economy Working Group, which will help co-ordinate and accelerate circularity projects across our global business and develop future KPIs. In addition, in 2023 Kingspan will launch a new sustainability training programme that includes circular economy training resources that will be made available to all employees.



Waste management

Our efforts to meet our zero company waste to landfill target are focused on the three key principles of reduce, reuse and recycle.

Reducing waste whilst we grow as a business is an ongoing challenge; we have nevertheless made significant progress with waste segregation, and we are continually improving our waste data collection systems and processes. This will allow for increased visibility on material flows and highlight areas for improvement. We strive to achieve the highest possible efficiency in factory processes. When production waste cannot be reintroduced back into our manufacturing processes, we seek to repurpose and recycle it into other products, thanks to established partnerships with other industry stakeholders.

This year we have also extended our external assurance scope to include waste generation data, aiming to increase confidence in our waste-related disclosures.

zero

Company waste to landfill by 2030

Raw materials

The use of recycled, bio-based and recyclable input materials that are responsibly sourced is a key element of our circularity strategy. We are currently assessing the sources of the materials that go into our products and how they affect the potential end of life options of products. As an initial step, we are working to increase our use of recycled materials whilst also exploring potential bio-based raw material (that are responsibly sourced and accredited) options for future products. We have several ongoing projects within the divisions, as well as with our key raw material suppliers.

Our procurement and sustainability teams are actively working to find recycled raw material options for our key raw material categories. Steel has been one of the key focus areas this year as it significantly contributes to the embodied carbon of our insulated panel products. In 2021, we invested in H2 Green Steel, with the objective of securing future supply of green steel with higher recycled content and lower embodied carbon.



In 2022, we continued to work with our business partners to increase our use of recycled PET as a raw material. In line with our Planet Passionate target, in 2022 we used the equivalent of 803 million recycled PET bottles in our manufacturing processes.



Circularity - our LIFECycle Product Circularity Framework

As a manufacturing business, key focus must be on enhancing the circularity performance of our products. Our LIFECycle Product Circularity Framework will enable us to embed circularity principles and benchmark our performance under five key themes:

Lean design for circularity
Embedding resource efficiency and circularity principles into new and existing development processes.

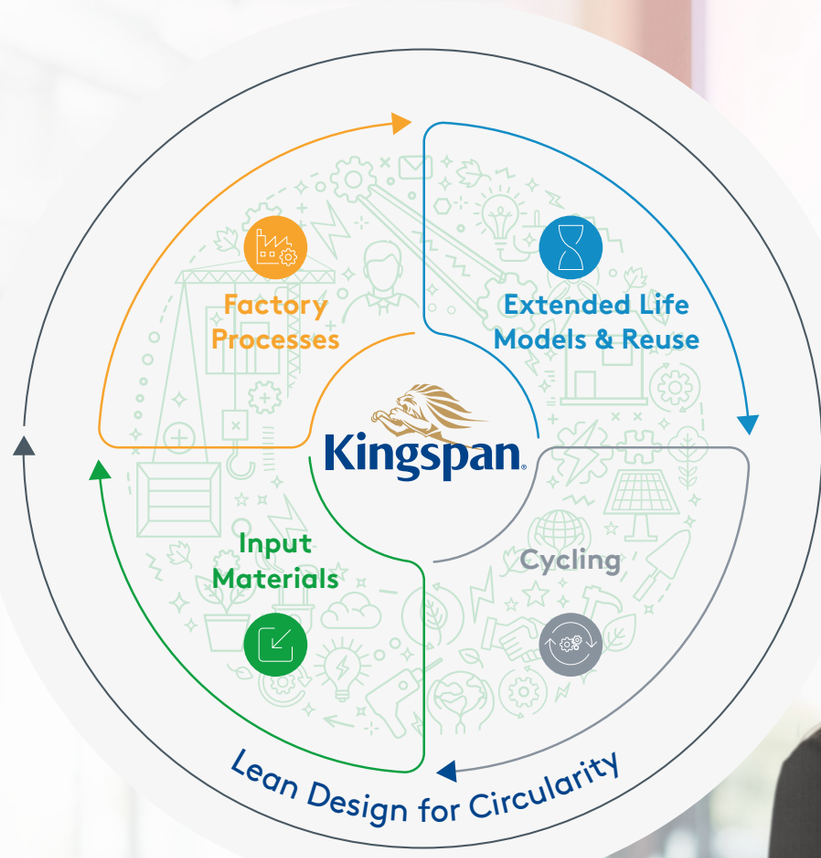
Input materials
Assessing the source of our materials and how their use can affect the end-of-life options of the products.

Factory processes
Working to improve our resource efficiency by reducing or eliminating waste creation within our manufacturing processes and reducing the quantity of raw materials needed to make our products.

Extended life models & reuse
Working to help to extend the in-use phase of products and enabling reuse programmes by supporting industry initiatives and pilot projects.

Cycling
Developing a range of options to help keep materials and products that reach the end of their service life and cannot be reused, circulating within the economy. We aim to do this through regional and local partnerships and the deployment of in-house mechanical and chemical recycling facilities.

Our progress, key projects and other relevant KPIs are presented on page 36.





"Our Circularity working group gives us the opportunity to work collaboratively, sharing learnings and inspiring progress to come up with solutions and accelerate the achievement of our circularity targets."

Ciara Crosby,
Sustainability Co-Ordinator
Kingspan Group

1Billion

We aim to recycle 1 billion PET bottles into our manufacturing processes annually

Water – Introduction

Access to water is a basic human right and a prerequisite to sustainable development. The effects of climate change and increasing urbanisation and population density are amplifying water stress and contamination of water supplies.

We recognise that water scarcity and misuse are a global pressing concern and as a global manufacturer, reducing our negative impacts on the world's water resources and water-related ecosystems is a priority.







Rainwater harvesting

As a global manufacturer, conserving water to lessen our impact on the world's water resources is a priority. We have set a target of harvesting 100 million litres of rainwater annually on our sites by 2030, to help reduce our impacts on the water supplies that we share with local communities and water-related ecosystems. We aim to conserve water and reduce our use of mains water and rainwater/stormwater runoff. All harvested water will be either used by Kingspan in our operations, sold or donated to local communities.

100m

We have set a target to harvest 100 million litres of rainwater annually on our sites by 2030



Our progress, key projects and other relevant KPIs are presented on page 38.

Ocean plastic pollution

Plastic is a highly valuable material in modern life which can have a very positive environmental impact in the right applications, but as with all materials it must be properly managed. More than 17 million metric tonnes of plastic entered the ocean in 2021, constituting 85% of marine litter. In addition, climate change, pollution, resource depletion and acidification are putting stress on marine ecosystems, threatening not only the sustainability of global fisheries and biodiversity but also the livelihoods and wellbeing of people who depend on the oceans.

At Kingspan, being Planet Passionate is not just about enabling change within our own business but also addressing some of the environmental challenges that we now face. We are mindful of the need to clean-up our oceans, removing tonnes of man-made debris and plastic waste and are committed to both helping raise awareness of this need, while also supporting river and ocean clean-ups.

We have committed to supporting five ocean clean-up projects to help play a part in tackling this issue. In 2022, we announced our third partnership with Clearbot. We are currently exploring more partnership options close to our facilities worldwide and aim to bring more online in 2023.

Planet Passionate – Our 10-year sustainability programme

Our 10-year global sustainability programme aims to help tackle three big global challenges:

Climate Change

Circularity

Protection of the natural world.

We pledge to play our part and believe advanced materials, building systems and digital technologies can play an important role in helping to address these global issues. Working in partnership with industry, and through IKON, our Global Innovation Centre, we are confident that we can help support and accelerate the transition to a clean energy, resource efficient future.

Rooftop Solar PV
Insulated Panels North America
Modesto, California

Our approach

We recognise that our Planet Passionate targets are ambitious and will be challenging to achieve. During 2022 we further developed our detailed programme roadmap, which includes target-specific strategies and timelines to manage and track progress.

Management

Our approach to the general management of the programme builds on strong internal procedures and processes that were developed throughout the years. Our Planet Passionate team consists of 15 divisional representatives from all business units. Each business unit has a primary representative on the Global Review Team, as well as divisional micro-teams to champion the Planet Passionate strategy across the business.

The Global Planet Passionate team meets on a quarterly basis to discuss progress and to facilitate peer-to-peer learning. We have also developed multiple working groups to help address specific challenges related to our targets, including renewable heat, waste and zero emission car rollout.

Green Finance

In June 2021, we signed up to a five-year €700m Revolving Credit Facility. The facility was provided by a syndicate of 10 leading international banks and is to be used for general corporate purposes. The facility has an in-built pricing incentive on the achievement of sustainability indicators that are based on our Planet Passionate commitments and is therefore fully aligned with our Group's wider strategy.

Remuneration

In 2021, Kingspan Group introduced an additional ESG measure in its Performance Share Plan (PSP) framework, recognising the importance of non-financial measures to both short- and long-term performance. The measure is based on 10 of the Planet Passionate targets against 10% of the annual PSP award. Kingspan has set internal annual targets at Group level to help keep the business on track to achieve our ambitious Planet Passionate 2025 and 2030 targets.



Internal engagement

Sustainability is a topic that is important to our employees and we want to enable them to be Planet Passionate both at work and at home. To help continually educate and keep our colleagues up to date, we are developing a suite of educational e-learning modules on Planet Passionate related topics such as Climate Change, Carbon and our Sustainability Strategy. As a first step, we have developed a Planet Passionate Employee Guide e-learning module, which has been circulated to all employees.

In 2022, more than 5,482 employees completed the training across our Group. The internal response has been very positive, and we fully believe in our people to help us to fulfil our vision. In addition, our divisional Communication Champions help to facilitate the communication of any updates about our Planet Passionate initiatives to all departments within the Group. During 2022, our employees conducted Planet Passionate related projects at our locations around the world including waste workshops, local clean-up projects, tree planting events, and deployment of beehive sanctuaries. Please find more information about our Planet Passionate Communities initiative on page 45.

> The value of coming together in-person to share knowledge, expertise, experience and inspiration cannot be underestimated.

2022 Planet Passionate Target Progress

	Target	Target Year	UNDERLYING BUSINESS 2020	2021	2022	Progress towards target	WHOLE BUSINESS 2020	2021	2022
CARBON	Net zero carbon manufacturing (scope 1 & 2 GHG emissions[1] - tCO_2e)	2030	410,224 [2]	389,299 [2]	242,734	40.8%	517,972 [2,3]	519,576 [2,3]	385,157 [3]
	50% reduction in product CO_2e intensity from primary supply partners (%)	2030	-	-0.53	0.04	0.04%	-	-0.53	0.04
	Zero emissions company funded cars - annual replacement (%)	2025	11	29	60	60%	11	28.5	58 [4]
ENERGY	60% direct renewable energy (%)	2030	19.5	25.8 [2]	34.3	34.3%	19.5	24.9 [2]	33.4
	20% on-site renewable energy generation (%)	2030	4.9	5.1 [2]	7.2	7.2%	4.9	4.9 [2]	7.1
	Solar PV systems on all wholly owned sites (%)	2030	21.7	28.4	41.5	41.5%	21.7	29.2	35.2
	Net zero energy (%)	-	100	100	100	100%	n/a		
CIRCULARITY	Zero company waste to landfill (tonnes)	2030	18,642	16,359 [2]	9,081	51.2%	18,642	17,150 [2]	10,828
	Recycle 1 billion PET bottles into our manufacturing processes annually (million bottles)	2025	573	843	803	80.3%	573	843	803
	QuadCore™ products utilising recycled PET by 2025 (no. of sites)	2025	1	1	3	16%	1	1	3
WATER	Harvest 100 million litres of rainwater annually (million litres)	2030	20.1	20.5 [2]	26.3	26.3%	20.1	20.5 [2]	26.4
	Support 5 ocean clean-up projects (no. of projects)	2025	1	2	3	60%	1	2	3

Underlying Business includes manufacturing, assembly and R&D sites within the Kingspan Group in 2020 plus all organic growth.
Whole Business includes all manufacturing, assembly and R&D sites within the Kingspan Group, including acquisitions since 2020.
[1]: Excluding biogenic emissions. Scope 2 GHG emissions calculated using market-based methodology.
[2]: Restated figures due to improved data collection & change in calculation methodologies.
[3]: GHG emissions were recalculated due to acquisitions that occurred in 2021 & 2022.
[4]: Excluding recent acquisitions due to unavailability of data at this time.

INTENSITY INDICATORS (whole business)

Intensity Indicators	Reduction from 2020
Carbon intensity[1] tCO_2e/€m	54% Reduction
Energy intensity (MWh/€m)	28% Reduction
Landfill waste intensity (t/€m)	68% Reduction
Water intensity (million lt/€m)	16% Reduction

Note: the intensity indicators were calculated based on absolute figures (2022 business) and 2022 revenue was used as the denominator to calculate the ratio.

Carbon and energy -
Key metrics and performance indicators

The below carbon and energy indicators showcase the progress we made in 2022

Renewable energy per region (GWh)

Americas	APAC
59.1	3.9
Europe	
248.7	

On site generation breakdown (GWh)

SOLAR	28.0
BIOFUELS	26.3
OTHER	4.8

Key raw materials carbon intensity (tCO_2e/T)

2020	2021	2022
2.57	2.58	2.57 ↓

New renewable electricity contracts

2020	2021	2022
15	38	24

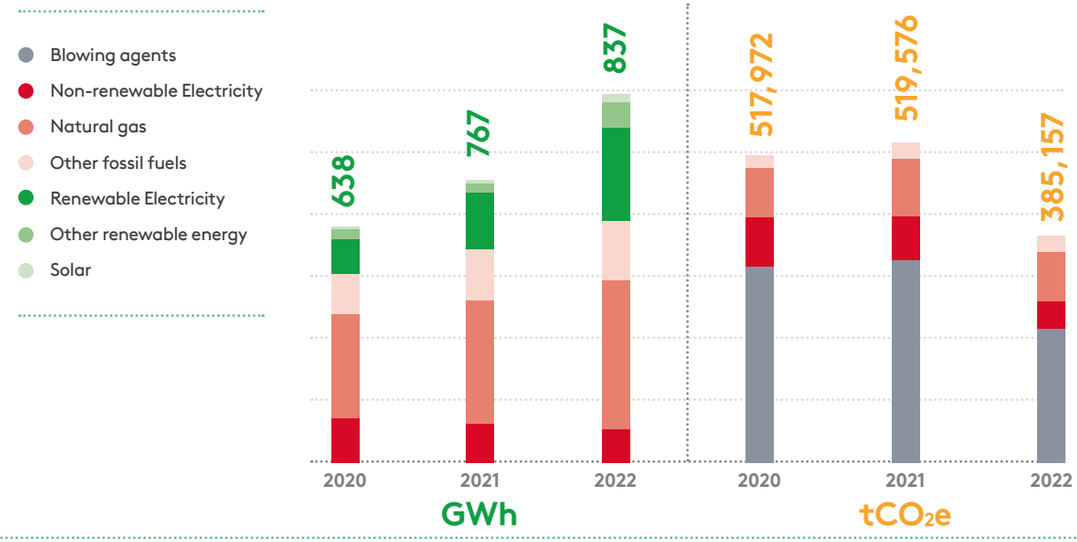
Carbon intensity[1] ($tCO_2e/€$)

2020	2021	2022
89.6	64.1	41.1 ↓

Energy (MWh/€)

2020	2021	2022
139.5	118.0	100.4 ↓

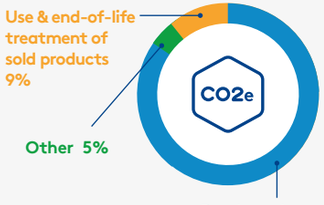
Energy sources and Scope 1 & 2 GHG Emissions[1]



Carbon footprint 2022[1] (tCO_2e)

340,406	SCOPE 1	(22%↓)
44,750	SCOPE 2	(46%↓)
7,286,049	SCOPE 3	(6%↓)

Scope 3 Emissions



435
New EVs

82
New EV chargers

[1]: Excluding biogenic emissions. Scope 2 GHG emissions calculated using market-based methodology.

Carbon and energy – 2022 project highlights

The case studies on this page highlight key projects that became operational in 2022 and helped us make progress against our targets



Rooftop Solar PV
TATE Division:
Jessup, United States



Rooftop Solar PV
Insulated Panels CEE Division:
Ujhartyan, Hungary



Solar PV Extensions



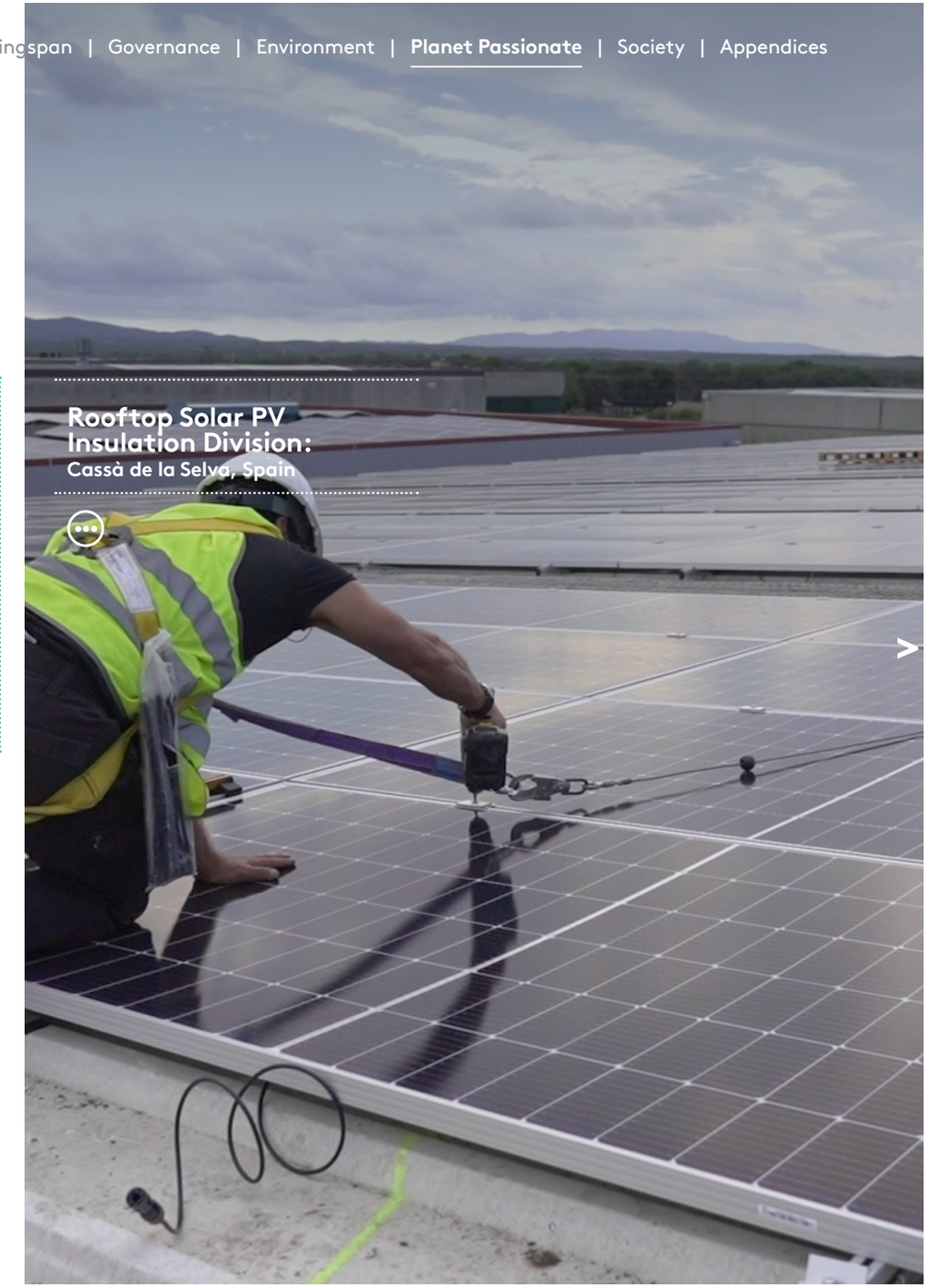
Rooftop Solar PV
Insulated Panels CEE Division:
Leskovac, Serbia



Renewable fuel contract
Joris Ide Division:
Belgium



Renewable Electricity Contract
Insulation Division:
Winchester, United States



Rooftop Solar PV
Insulation Division:
Cassà de la Selva, Spain

Carbon and energy – 2022 project highlights (continued)

The case studies on this page highlight key projects that became operational in 2022 and helped us make progress against our targets

44

New Electric Forklifts in 2022



East Stroudsburg,
AWIP

Energy efficiency

A key element of our energy and decarbonisation strategy is to reduce the energy intensity of our operations, whilst also increasing generation and procurement of renewable energy. In 2022, Kingspan has completed over 29 energy efficiency projects across the business. These projects, with an estimated impact of over 3GWh of energy savings, included a number of sites converted to LED lighting systems. One such project is the installation of LED lighting across the Winterswijk insulation plant with estimated annual energy savings of over 400MWh.

Within our manufacturing processes, the use of air compressors can be very energy intensive and in 2022, three projects have been completed including the replacement of an air compressor in Hull in our Data + Flooring division. Other related projects, include leak testing and upgrades of compressors to reduce overall energy intensity.

Energy efficiency measures are also key in the development of any new facilities and in 2022, a large scale installation of 45 Solatube Tubular Daylighting Systems with integrated LED light kits were installed throughout the office areas and canopy entryway at the recently built AWIP facility in Pennsylvania. Refurbishment of existing sites, including projects to reduce lighting and heating requirements such as roof replacements and overcladding have been completed, of which the energy and carbon savings are not yet visible but will reduce the energy use of these sites of over the coming years.



Electric vehicles & chargers

Continued progress towards our zero emissions target by introducing further electric vehicles and increasing the number of chargers installed on our manufacturing sites. In 2022, we expanded our use of electric vehicles, as part of our employee car fleet, into new regions including Australia, Brazil, Mexico and Dubai.

We added 82 new EV chargers in 2022, bringing the total number of EV chargers installed on our manufacturing sites to 198 EV chargers.



FLTs

In 2022, Kingspan introduced 44 new electric forklifts across 22 manufacturing sites, bringing the total number of electric forklifts in the fleet to 490.

In Canada, the Vicwest business introduced their first 16 tonne electric forklift on the Stratford site.

Circularity –
2022 key metrics and progress indicators

The selection of performance indicators and case studies below demonstrate some of the progress we made in 2022

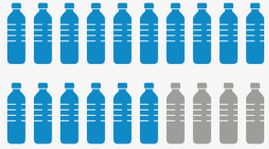
Landfill waste intensity (t/€m of revenue)

2022:
1.3 ↓

2021:
2.6

2020:
4.1

Recycled PET bottles into our processes (million)



803
2022

Waste generation (t)

138,122
(46%) ↑

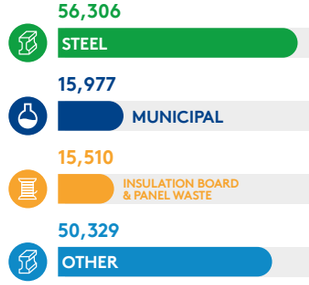


Waste to landfill (t)

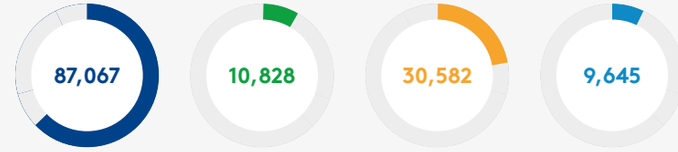
10,828
(42%) ↓



Waste generation by waste fraction (t)



Waste generation by disposal type (t)



Waste recycling/reuse by region

63%	72%	71%
Europe	Americas	APAC

QuadCore introduction of PET polyol into manufacturing processes

2022
3 sites: **16%**

2021
1 site: **5%**

Zero waste to landfill, Araquari

In 2022, our Brazilian insulated panel manufacturing site in Araquari was certified as a zero waste manufacturing facility with 94.9% diversion of waste from landfill and incineration.

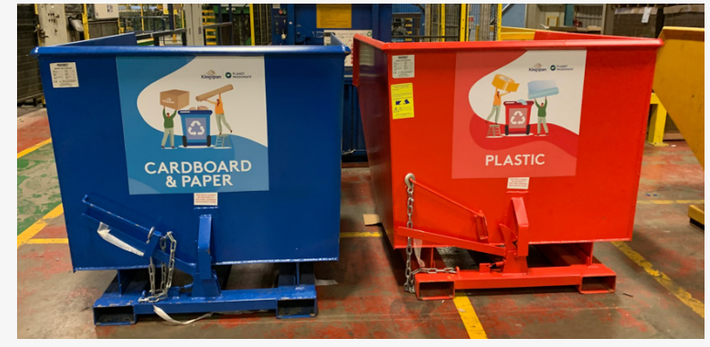
Improved waste segregation

13
additional waste streams added

50%
reduction in the municipal waste category from prior year



Waste segregation Insulated Panels West



The UK Insulated Panels business implemented measures to improve waste management and are currently undergoing zero waste to landfill certification.

Learn More

Circularity – 2022 Performance highlights

Below we present the progress we made on the five key themes of our LIFECycle Product Circularity Framework

Lean design for circularity



Embedding lean and circular thinking within product design strategies is a crucial first step in improving the circularity of our product portfolio. We are actively working on several initiatives in our business with our suppliers and with industry partners such as:

- **COOL DH**
  A project to support the development of new, efficient district heating and cooling systems.
- **QuadCore™ LEC insulated panel range**
  Development of a new product with lower embodied carbon

Learn More

Input materials



One of our key challenges is to increase the renewable and recycled content of our products, without compromising quality or performance. Our teams are exploring new material composition and bio-based chemistry solutions chemistry solution aiming to find suitable, lower environmental impact alternatives in ongoing projects such as:

- **Light + Air: Recycled blue water bottle project**
  Investigating the use of polycarbonate recycled from blue water bottles
- **Polyol >40% recycled content**
  Development of new polyol for next generation roofboard insulation
- **Research & Development: Bio-based materials research**

Learn More

Factory processes



Resource efficiency is at the core of a circular economy. In line with circular economy principles and our Planet Passionate targets, we aim to improve the overall resource efficiency of our manufacturing processes including minimisation of waste generation. There are a number of ongoing projects in relation to this topic such as;

- **Material efficiency**
  Water + Energy
- **Waste takeback**
  Production process updated to remove contaminants and allow waste takeback
- **Process AI**
  Hawkeye project to live monitor products for production defects

Learn More

Extended life models & reuse



Extended life models for construction products can take many forms, some of which require a number of systems to be in place to enable such models. In 2022, we continued investigation of potential takeback schemes to expand the current takeback schemes in place in the UK and central Europe regions, which collect product installation waste from construction sites.

See interview with Tommy Martin, Divisional R&D Manager, about the challenge and opportunity posed by the further development of extended life models for construction products.

Learn More

Circularity –
2022 Performance highlights
(continued)

Cycling



Where feasible, we strongly advocate for reuse over recycling. However, as this is not always possible, we are also exploring and implementing cycling options to keep materials within the economy. We have ongoing projects to develop and implement chemical and mechanical cycling solutions for products and materials at each stage of production, installation and end of life:

- Insulated panel production waste recycling into slab thermal insulation in Brazil
- Kooltherm production and installation waste recycling in central Europe
- Synthesia chemical recycling insulation waste into raw materials
- Warmotech incorporation of insulation waste into window installation profiles

Case study:
Kingspan Isoeste Insulated Panel Mechanical recycling

In 2022, Kingspan Isoeste started a project to recycle its PIR insulation waste from the manufacture of insulated wall and roof panels. Several types of agglomerates and different moulding processes were tested until we reached the ideal model for our business. We acquired equipment that transforms PIR waste into slabs for civil construction - a product widely used in Brazil and normally made of EPS.



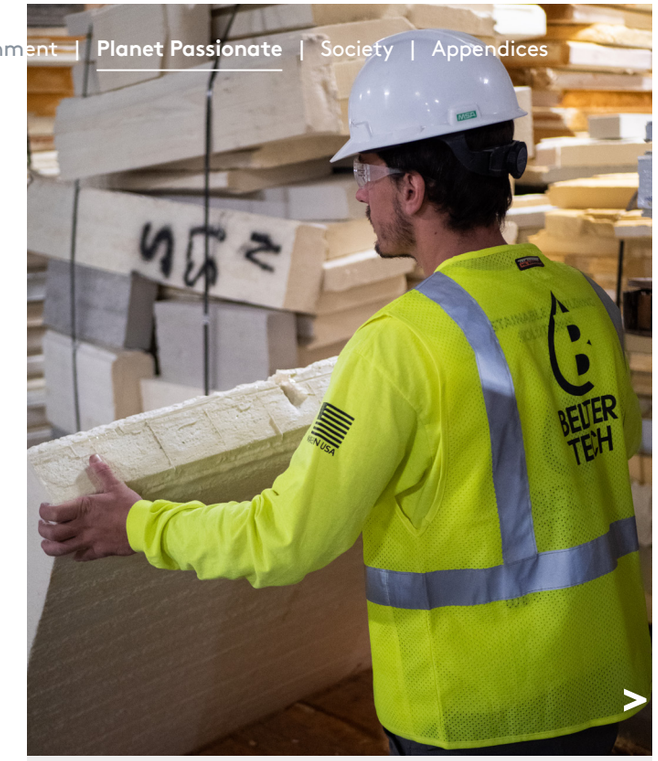
Learn More

Case study:
Recycling of insulation foam waste into raw materials

In 2022, production waste was evaluated from several insulated panel and insulation board manufacturing sites. A full scale industrial trial was successfully completed in Castellbisbal to make polyol containing up to 25% recycled foam waste with the total recycled content of the new product up to 57%.



Learn More



Case study:
BelterTech & Kingspan mechanical recycling

Insulated Panel North America are experimenting with new ways to keep its insulation production waste in use within the economy. They have recently partnered up with Atlanta based BelterTech, a manufacturer of sustainable building materials made from reclaimed waste products and recycled feedstocks.

Learn More

Water -
2022 performance metrics

The below indicators and highlights showcase our performance in key water areas

	2020	2021	2022
Water intensity (tsd/m€)	95.7	85.9	80.0
Water use (ML)	437.7	558.2	666.2
Rainwater harvesting %	4.6	3.7	4.0
Rainwater harvesting projects No. Projects	14	22	36
Rainwater harvesting capacity (ML)	19.3	29.1	68.7

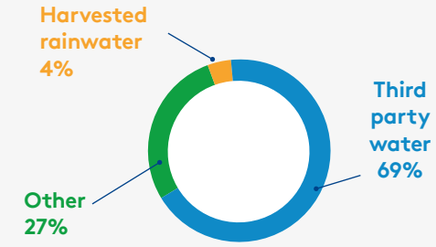
Rainwater harvesting capacity (ML)

North America	Europe	Rest of World
7.7 million litres	56.4 million litres	4.4 million litres

Water use by region

Europe	Americas	APAC
65%	26%	2%

Water use by type



Clean-up projects supported

2020	2021	2022	2023	2024
ECOALF Foundation 3-Year Partnership	Seabin™ 3-Year Partnership	Clearbot 3-Year Partnership	Ocean Clean-up Project	Ocean Clean-up Project

Clearbot - New clean-up project

clearbot

In 2022, we entered a 3-year partnership with Clearbot, our third ocean clean-up project, tackling ocean bound debris in India's Kerala state.

Established in 2019, Clearbot is a clean tech start-up with an ambitious mission to restore the balance between humanity and the oceans. Clearbot is a fully electric, self-driving robot boat. It uses artificial intelligence to automate several marine tasks such as pollution recovery, goods delivery, surveillance and water quality measurement.



Sidhant Gupta
Co-founder/CEO, Clearbot

Our Mission

Restoring balance between humanity and our oceans

"With this sponsorship from Kingspan, our team is now able to access the most vulnerable communities in India that are the most impacted by marine pollution. In the long run, the pollution we recover from these regional rivers is what ends up in our oceans and accumulates in the Pacific ocean. With Kingspan's support, we are a lot closer to achieving our mission - restoring balance between humanity and our oceans."

Sidhant Gupta
Co-founder/CEO, Clearbot

Learn More

Water -
2022 project highlights

See below a selection of the projects we commissioned in 2022 to further improve our water performance

Project highlights

Case study:
Rainwater Harvesting
Insulation Division: Askeaton, Ireland



Kingspan's Askeaton site in Limerick, Ireland is to harvest millions of litres of rainwater each year from a neighbouring quarry, relieving the burden on the local mains and helping Kingspan Group deliver on one of its key sustainability pledges. This project is expected to make the Askeaton site largely self-sufficient for its water needs.

Capacity

20m litres

Case study:
Rainwater Harvesting
Joris Ide Division: Baicoi, Romania



Capacity

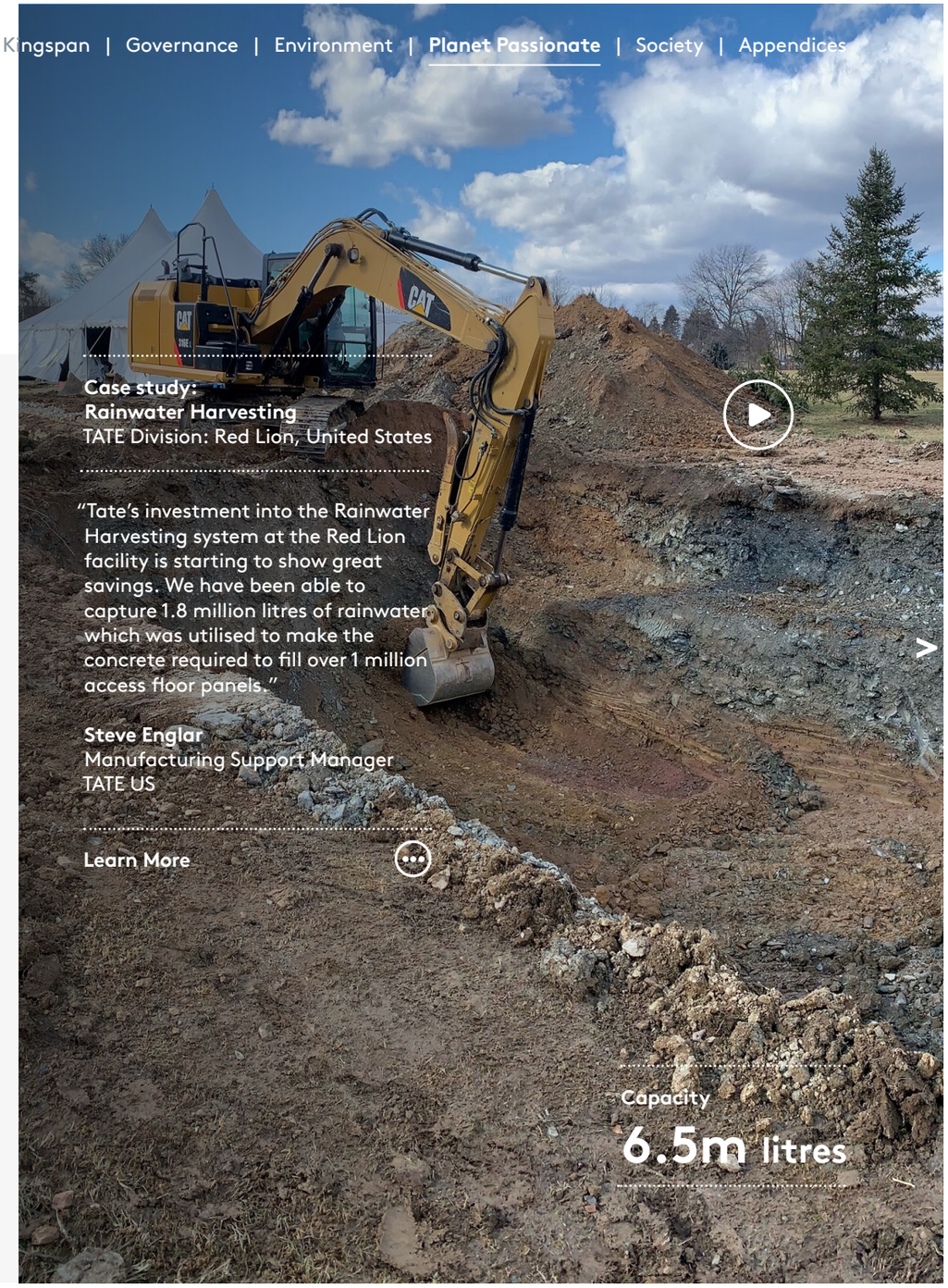
1.2m litres

Case study:
Rainwater Harvesting
Insulation Division: Burgos, Spain



Capacity

4.9m litres



Society

Whilst our Planet Passionate strategy spearheads our efforts to curb our environmental impacts and thus contribute to the environmental dimension of sustainable development, we are also making efforts to manage our social impacts.

We adhere to all applicable laws and regulations in all countries we operate in and aim to align with the needs and expectations of our stakeholders as a priority. Simultaneously, we understand that cooperation with our stakeholders is of paramount importance to reach our business objectives, grow as a business and contribute to sustainable development. At Kingspan, we define stakeholders as individuals or groups that have interests that are affected or could be affected by our activities. Maintaining an open dialogue has allowed us to build strong relationships in our value chain and local communities, as well as across the construction industry.

This chapter showcases how we interacted with our key stakeholder groups and key programmes, initiatives and memberships during the reporting period.

Investors

Kingspan is committed to interacting with the international financial community to ensure a full understanding of the Group's strategic plans and its performance against these plans.

During the year, the executive management and investor team presented at 11 capital market conferences and conducted 624 institutional one-on-one and group meetings.

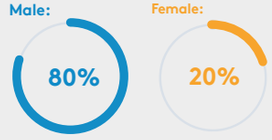


Employees

What has been achieved at Kingspan would not have been possible without the people that work hard every day to drive the company forward. A dynamic and motivated workforce is key to delivering the future growth strategy of the business. For this reason, talent is at the heart of future planning at Kingspan. This is why we uphold high labour standards in all countries where we operate, we invest in employee training and development, and we offer a safe, inclusive and productive working environment across our operations.

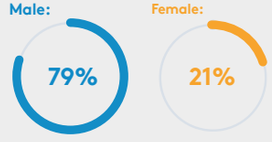
Number of employees 2021:

19,000+



Number of employees 2022:

22,000+



Health, safety & wellbeing

We regard Health & Safety (H&S) as an obligation, a fundamental human right and a decisive indicator of sustainable development. In addition, we acknowledge that by providing employees with a safe and healthy working environment, organisations build trust and strengthen their relationship with them, which eventually leads to increased performance and retention rates.

Health & Safety at work involves both the prevention of harm, and the promotion of health and wellbeing.

Health & Safety KPIs:

Injury frequency rate (p/100k hours)

	2020	2021	2022
LTIFR	1.2	1.2	1.0
Fatalities	1	1	0

Kingspan takes the safety of our employees incredibly seriously. All accidents, as well as near misses, are recorded and reviewed.

H&S is under on-going review at a facility and divisional level and a Group H&S Committee sits at least twice a year. It is an opportunity for all divisions to share best practice and discuss operational experiences that could help improve the welfare of all our employees.

Hazard identification processes include (but are not limited to):

- all near misses are assessed and processes are updated
- employees are encouraged to make suggestions for process improvements
- safety walks by responsible persons
- periodic workplace inspections
- risk assessment on new machines at installation

H&S investment

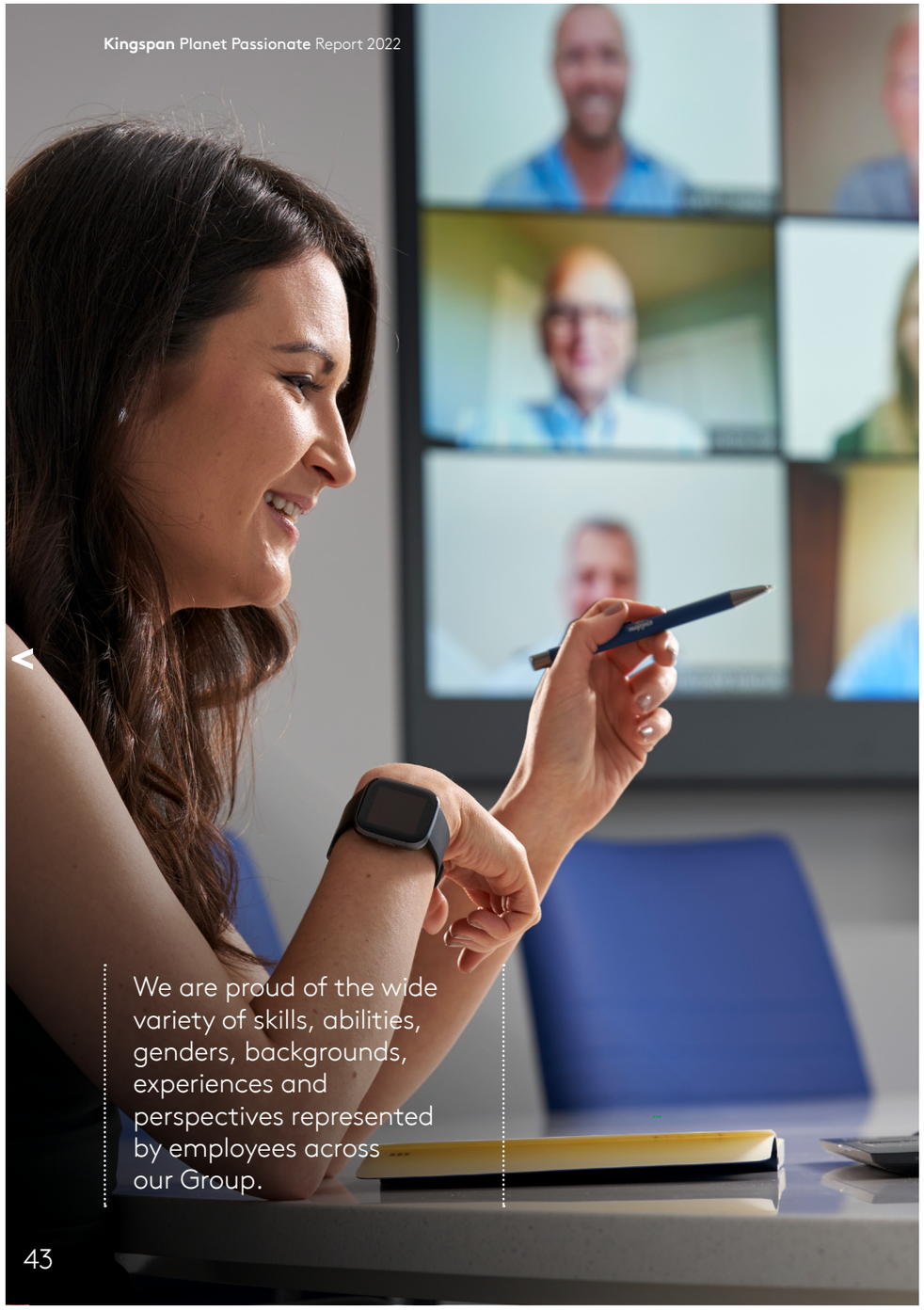
Initiatives implemented in 2022

- COVID-19 safety measures were an ongoing priority for 2022 and many safety initiatives to support the safe return to work were implemented across the Group.
- Contractor management and myoskeletal disease prevention programmes introduced by Water + Energy sites in Australia.
- Roll out of standardised divisional lock-out tag-out try-out (LOTOTO) procedures across all Insulation business units.
- Site specific safety improvements including machinery guarding and electrical safety upgrades in Data + Flooring.

Health & Safety Forum

Kingspan hosted a Health & Safety Forum in IKON in December 2022. It was attended by over 20 Health & Safety professionals from across the global business. The Forum is hosted twice annually and it was a pleasure to be back in person in December for the team to share best practice learnings. There were a number of presentations made during the Forum, covering topics such as OH&S management systems, learnings from serious incidents, best practice commissioning of new machinery, and employee training.

While we are pleased to report there were no fatalities in Kingspan in 2022, we are always striving to advance our H&S culture and sustain a safe working environment for our employees.



We are proud of the wide variety of skills, abilities, genders, backgrounds, experiences and perspectives represented by employees across our Group.

Equal opportunities, employee rights and diversity

We see diversity and inclusiveness as an essential part of our productivity, creativity, and innovation. Kingspan is committed to providing equal opportunities from recruitment and appointment, training and development to appraisal and promotion opportunities for a wide range of people, free from discrimination or harassment and in which all decisions are based on work criteria and individual performance.

We are proud of the wide variety of skills, abilities, genders, backgrounds, experiences and perspectives represented by employees across our Group. Discrimination and other unfair practices in the conduct of our day-to-day business are absolutely prohibited.

Talent retention

At Kingspan, we use multiple tools to drive talent retention. These include traditional motivational tools such as reviews and objective setting, but there is also the opportunity to join a network of people across the company to drive real change through innovation and engagement with our Planet Passionate initiatives.

We are building a network of Planet Passionate Champions to help scale local action at our sites across the globe. In 2021, we redesigned and relaunched Kingspan's Internal Career Portal which provides an open and transparent forum for Kingspan employees to learn and apply for career opportunities across all of our businesses worldwide. It has a wealth of information about the types of roles and skills that are in demand to deliver on our strategic objectives.

Training And Development

Our people are our business. We unlock the potential of our employees and through them make a difference in the world. Leadership Development is a key bridge builder across all businesses worldwide. It is aligned with our strategic objectives and succession plans, which are reviewed bi-annually across the Group. We have an integrated talent management strategy which ensures that High Potentials identified on our succession plans are nominated to take part in our enterprise-wide leadership development programmes.

During 2022, Kingspan continued to invest in developing leader capability and strengthening and deepening our talent pipelines to support workforce sustainability. Our people play a critical role in delivering our purpose and strategy, aligned to our values. Customer centricity is at the heart of our leadership development, underpinned by our focus on high-performance and continuous innovation. We encourage our leaders to grow their careers in line with the growth of the Group. At Kingspan, we are more than aware of the key role leaders play in the achieving our strategy including our Planet Passionate targets. Our formal leadership development programmes are designed to equip our people with the skills to drive the business towards the achievement of our mission to accelerate a net-zero emissions future-built environment, with the wellbeing of people and planet at its heart.

Yours to Shape – Graduate Attraction and Development

Learn More

Programme for Executive Acceleration in Kingspan - PEAK

Learn More

Developing Leaders as Coaches

Learn More

Customers

As a strategic foundation for improving Kingspan's Customer Experience, harvesting the right insights is absolutely key to success. Through an elaborate and complex voice of our customer programme, we are gauging our performance with our different customers across the globe, throughout the year.

We want to know exactly what our different customers think and what drives them, so we know what we can do to act and improve the experience we deliver. As customer experience becomes more important in a digital world, our feedback programme gives us a means to hear what our customers have to say about their experience with us, keeping our finger on the pulse and providing us with the insights to develop and drive new digital technologies to help make meaningful change happen.

A key step in the Customer Experience programme has been assigning CX Programme Leads across the group which is enabling us to drive an ambitious improvement roadmap for operational excellence.



Building Information Modelling (BIM) & Digital Innovation

At Kingspan, we are passionately driven by improving the living environment of people around the globe. We also recognise that the industry is embracing digitalisation. This adoption is a key factor to enabling more efficiency and sustainability in manufacturing, delivery, construction and operations of our built environment. Our digital innovation research and development concentrates on the ongoing digitalisation of the construction industry. Utilising technologies such as generative design, simulation, augmented reality, virtual reality and digital twins as well as digital applications to improve decision making, product selection and workflows for our customers.

The increase in computer processing power has enabled improved functionality and has seen the increased adoption of BIM and Digital Project Delivery as a methodology for digital project delivery. Coupled with this process, we are introducing a wide variety of digital tools to aid in design, detailing, specification, construction and operations.

Our 2022 BIM & Digital Innovation Programme drove the enhancement and introduction of several tools to improve the workflows of our customers. Utilising the latest digital technologies, Kingspan aims to empower its customers and partners with tailored digital solutions. Our 2022 Digital milestones include:

- 18 PIM Enabled Websites launched and live available here
- 1 Panels PIM solution
- 6 live apps on the Devleo app platform
- 20 average daily interactions with the new 3D Product Viewer available here
- 121 buildings detailed using KINGCADD available here
- 12,211 product configurations with BIM Designer available here
- 376 buildings designed using BIM 360 available here





Kingspan Wins 2022 ICE Award

Kingspan Group won the award for Innovation in Construction – Specialist Service at the Irish Construction Excellence Awards (ICE) 2022 for its KingCADD Detailer software. KingCADD Detailer enables customers to create more accurate models in half the time it would take using conventional 2D approaches. It reduces detailing errors and incorporates over 50 years of Kingspan's product and installation methodology in a free, easy-to-use digital tool.

More information is available here.

Planet Passionate Communities

Autumn 2021 saw us launch Planet Passionate Communities, the philanthropic arm of our ambitious 10-year sustainability programme, Planet Passionate. This initiative is designed to give people and communities around the world the support they need to implement environmental and wellbeing projects, ultimately enriching life in the community.

64+

Planet Passionate Communities projects completed

At the heart of Planet Passionate Communities is an ambition to create a positive legacy and a better world, and it's already having a real impact, both locally and globally.

Locally, our businesses are devoting their time and resources to support community projects. The idea: to build a world that's powered by renewable energy, has net-zero carbon, manages water sustainably, and protects the Earth's valuable resources by reducing, re-using and recycling.

On a global level, we've joined forces with GOAL, the international humanitarian response agency, in a five-year partnership that will make the lives better for some of the world's most vulnerable people. Over those five years, we will be providing them with the expertise, products and financial contributions they desperately need in their rapid responses to complex global issues. Our joint aim is to develop critical infrastructure in healthcare and education with sustainability at its core.





GOAL

In November 2021, Kingspan and GOAL began a five-year partnership that will support GOAL's transformative work by providing expertise and products, supported by financial contributions – all combining to a €1.5 million commitment to develop critical infrastructure with sustainability at its core in healthcare and education.

More about GOAL

Humanitarian aid agency GOAL was founded in 1977 and is headquartered in Dublin. Over the last four decades, you'll find GOAL responding to major humanitarian crisis after crisis. Today, it's working with vulnerable communities in 15 countries to help those facing poverty, conflict, hunger and climate change. GOAL brings emergency food and shelter when a crisis strikes; expertise and resources to strengthen health care systems; training leading to meaningful work and income; and education and support to fight hunger.

Puerto Cortes Hospital Honduras

When the COVID-19 pandemic hit Honduras, the Public Hospital of Puerto Cortés was nominated as the first line of response. But when the ETA & IOTA storms hit later the same year, it became clear that the hospital simply couldn't cope. The chosen solution gave a chance for GOAL and Kingspan to join forces in building a new, state of the art hospital wing just 10 metres away from the existing Hospital.



A 24-bed hospital design was originally envisaged but due to a variety of cost increases, this has now been amended to a 12-bed design. With 12 new beds, shared equally between a female and a male ward, this would add capacity for providing critical care to patients. The new Sayri Molina wing, named after a GOAL employee who lost her life due to the pandemic, will use a combination of Kingspan's building envelope panel solutions for walls and roofs, and Cleanroom Modular Unit technology (prefabricated panels) providing hygienic and safe rooms.

Local action -

Our businesses have executed an array of Planet Passionate Communities activities in their local areas.

Water + Energy helps transform children's lives



Kingspan Insulated Panels North America adopts a beach



Morin Corporation takes on water and the oceans



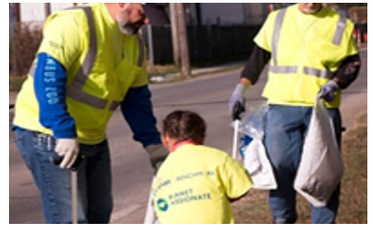
Balex Metal finances two Portbins



Kingspan Isoeste help protect the environment in Brazil



Kingspan Insulated Panels support the Keep Columbus Beautiful (KCB) Project in Ohio, USA



Synthesia Technology initiatives in Spain



Tate cleans up the parks



Kingspan Light + Air Slovakia complete a team mountain run



Euroclad Group supports education through their Community Fund



Balex Metal keep bees & upcycle collected PET



Kingspan Insulation Dubai undertake a beach clean-up and plant trees



Terasteel helps the planet breathe



AWIP tree planting, East Stroudsburg



Kingspan Data & Flooring partner with the local Ballyfermot Men's Shed



Appendices

A1: Planet Passionate metrics

A2: Environmental and Social indicators

A3: Reporting with reference to the GRI Standards

A4: SASB

A5: Climate-related disclosures

A6: TCFD – Recommendations and supporting recommended disclosures

A7: The EU Taxonomy

A8: Assurance statement

Photography Credits:

Born Free Foundation (p. 10): Born Free Foundation

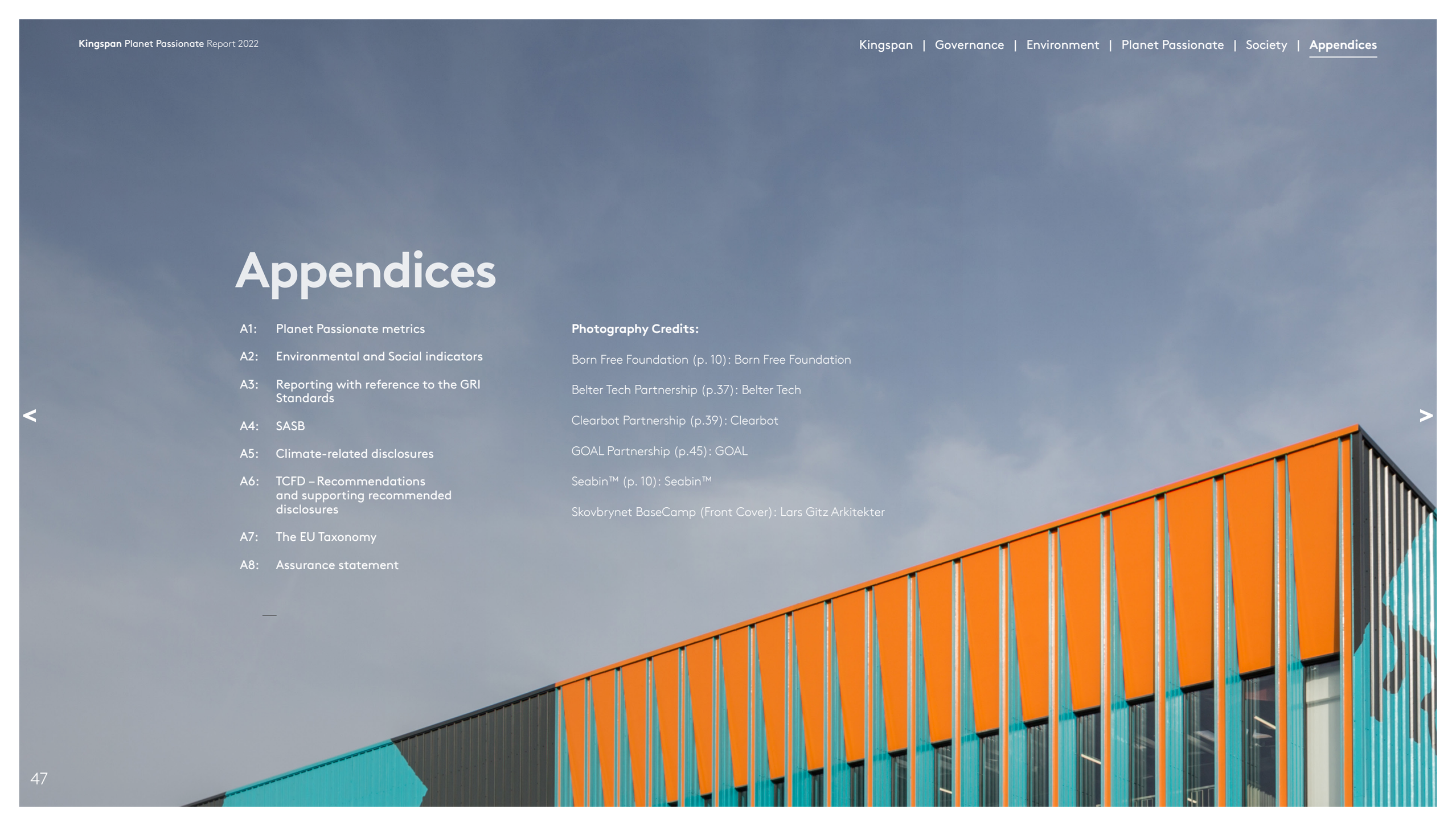
Belter Tech Partnership (p.37): Belter Tech

Clearbot Partnership (p.39): Clearbot

GOAL Partnership (p.45): GOAL

Seabin™ (p. 10): Seabin™

Skovbrynet BaseCamp (Front Cover): Lars Gitz Arkitekter



Appendix 1: Planet Passionate metrics

Planet Passionate Targets		Target Year	Underlying Business			Whole Business		
			2020	2021	2022	2020	2021	2022
Carbon	Net Zero Carbon Manufacturing - scope 1 & 2[1] GHG emissions (tCO_2e)	2030	410,224 [2]	389,299 [2]	242,734	517,972 [2,3]	519,576 [2,3]	385,157 [3]
	50% reduction in product CO_2e intensity from primary supply chain partners (%)	2030	-	-0.53	0.04	-	-0.53	0.04
	Scope 1 & 2 Rebaselined					107,748	103,066	42,839
	Scope 3 Key raw materials		2.57	2.58	2.57	2.57	2.58	2.57
	Zero emission company cars (annual replacement %)	2025	11.0	29.1	60.2	11.0	28.5	58.4% [4]
	No. of replacement cars (annual conversion)		296	695	683	296	717	745
	No. of electric cars (annual conversion)		32	202	411	32	204	435
Energy	60% Direct renewable energy (%)	2030	19.5	25.8 [2]	34.3	19.5	24.9	33.4
	20% On-site renewable energy generation (%)	2030	4.9	5.1 [2]	7.2	4.9	4.9 [2]	7.1
	Solar PV systems on all wholly owned facilities (%)	2030	21.7	28.4	41.5	21.7	29.2 [2]	35.2
	Net Zero Energy (%)	2020	-	-	-	-	-	-
	Renewable Energy Purchased and Used (GWh)		97.9	159.8	198.4	97.9	162.9	233.6
	Onsite renewable energy generated and consumed (GWh)		26.3	27.4	36.1	26.3	27.8	45.9
	Onsite renewable energy generated (GWh)		31.1	37.1	49.2	31.1	37.4	59.1
	Total Energy Use (GWh)		638.2	725.6	683.2	638.2	766.7	836.5
	No. of wholly owned sites		92	102	94	92	106	125
	Wholly owned sites with Solar PV		20	29	39	20	31	44
Circularity	Zero Company waste to landfill (tonnes)	2030	18,642	16,359 [2]	9,082	18,642	17,150	10,828
	Recycle 1 billion PET bottles into our manufacturing processes (million bottles)	2025	N/A	N/A	N/A	573.00	843.5	803.04
	QuadCore™ products utilising recycled PET (% sites)	2025	5	5	16	5	5	16
	No. of sites producing Quadcore		19	19	19	19	19	19
	No. of sites producing PET Quadcore		1	1	3	1	1	3
Water	Harvest 100 million litres of rainwater (ML)	2030	20.07	20.54 [2]	26.27	20.07	20.54 [2]	26.39
	Support 5 Ocean Clean-Up projects (No. of projects)	2025	N/A	N/A	N/A	1	2	3

Underlying Business includes manufacturing, assembly and R&D sites within the Kingspan Group in 2020 plus all organic growth.
Whole Business includes all manufacturing, assembly and R&D sites within the Kingspan Group, including additions since 2020.
[1]: Excluding biogenic emissions. Scope 2 GHG emissions calculated using market-based methodology.
[2]: Restated figures due to improved data collection & change in calculation methodologies.
[3]: GHG emissions were recalculated due to acquisitions that occurred in 2021 & 2022
[4]: Excluding recent acquisitions due to unavailability of data at this time

Appendix 1 (cont'd): Planet Passionate targets - definitions

Planet Passionate targets		
Category	**Target**	**Definition**
Carbon	Net zero carbon manufacturing	Minimum 90% absolute reduction in absolute scope 1 & 2 (market-based methodology) greenhouse gas (GHG) emissions (excluding biogenic emissions) with any residual GHG emissions (maximum 10%) neutralised. Only hard-to-abate GHG emissions will be neutralised with the use of high-quality credits that lead to an additional climate impact that is permanent and accurately quantified.
	50% reduction in product CO_2e intensity from primary supply partners	We aim to achieve a 50% reduction in the carbon (CO_2e) intensity of the primary raw materials supplied to Kingspan by 2030.
	Zero emissions company cars	Definition of a zero emissions car is a car with zero emissions at the tailpipe/in use, in line with Regulation (EU) 2019/631. The target boundary included all employee cars provided and funded by the company (car allowances).The reported annual renewals vehicles converted to electric vehicles does not include car allowances as these vehicles may not be converted annually.
Energy	60% Direct renewable energy (%)	Energy is classed as 'direct renewable energy' if used to directly power our manufacturing processes (i.e. on-site renewable energy generation consumed) or via a purchase of renewable energy products from energy suppliers. This target includes purchased "Direct renewable energy" and renewable energy generated and consumed on-site.
	20% On-site renewable energy generation (%)	Renewable energy generated on-site, both consumed and exported, calculated as an equivalent percentage of total energy consumption.
	Solar PV systems on all wholly owned facilities (%)	Percentage of all sites that are wholly owned by the Kingspan Group (both land and buildings) that have rooftop solar PV systems installed.
	Net zero energy (%)	Net Zero Energy by matching 100% of our operational energy use through the use of renewable energy and the purchase of renewable energy certificates to offset any remaining non-renewable energy use. Target retired at the end of 2022.
Circularity	Zero company waste to landfill (tonnes)	Minimum 99% landfill diversion of wastes generated in Kingspan manufacturing, R&D and assembly facilities.
	Recycle 1 billion PET bottles into our manufacturing processes annually (million bottles)	Target to incorporate recycled PET to the equivalent weight of 1 billion PET bottles into our manufacturing processes annually by 2025
	QuadCore™ products utilising recycled PET (% sites)	The completion of pre-certification testing for QuadCore™ products that utilise recycled PET polyol at 19 QuadCoreTM manufacturing sites across the Group.
Water	Harvest 100 million litres of rainwater annually (ML)	Capacity to harvest 100 million litres of rainwater per annum on Kingspan sites, with onwards use for all harvested water e.g consumed, sold or donated.
	Support 5 ocean clean-up projects (no. of projects)	Support five ocean clean-up projects by 2025 to help reduce marine pollution across the world's oceans.

Appendix 2: Environmental and Social indicators†

	2020	2021	2022
Energy			
Total energy consumption (GWh)	638.2*	766.7*	836.5
Energy intensity (MWh/€m of revenue)	139.5*	118.0*	100.4
Total energy consumption from renewable sources (GWh)	146.9*	221.3*	311.7
Net-Zero Energy (%)	100	100	- **
Energy consumption (purchased) (GWh)	588.0	706.9	757.5
Renewable electricity consumption	96.3	156.0	210.5
Non-renewable electricity consumption	124.0	104.9	79.1
Renewable fuels consumption	0.1	3.5	17.3
Non-renewable fuels consumption	363.5	436.0	441.3
Renewable heating consumption	1.5	3.5	5.9
Non-renewable heating consumption	2.7	3.0	3.4
Renewable electricity generated (GWh)	15.0	16.5	25.3
Fuels consumption for on-site generation (GWh)	35.2	43.3	53.7
Renewable	14.3	14.3	28.6
Non-renewable	21.0	29.0	25.1
Total on-site energy generated and consumed (GWh)	37.3	42.9	59.2
Biofuels	7.1*	7.8*	8.8
Biomass	4.5	4.7	15.7
Ground/air source heat pumps	0.01	0.4	0.9
Hydro	0.3	0.0	0.03
Solar	8.3	10.6*	16.7
Wind	2.3	1.1	1.4
CHP renewable	3.8	3.2	2.4
Non-renewable	11.0	15.1	13.2
Total on-site renewable energy exported (GWh)	4.8	9.7	13.2

† Boundary for environmental data: Whole business – manufacturing, assembly, and R&D sites. Whole business includes all businesses owned by Kingspan at the end of 2022, including acquisitions.
*: Restated figures due to improved data collection & change in calculation methodologies.
**: As we retire our Net Zero Energy target in favour of a carbon charge, newly acquired businesses are not included in this target, and therefore, it is only applicable to our underlying business as stated in the Planet Passionate progress table.

	2020	2021	2022
Carbon			
Scope 1 GHG emissions (tCO_2e)	435,827 [1,2]	445,186 [1,2]	340,406 [2]
Biogenic GHG emissions (tCO_2e)	18,961 [1,2]	24,539 [1,2]	26,531[2]
Scope 2 GHG emissions (market-based) (tCO_2e)	82,145 [1,2]	74,390 [1,2]	44,750 [2]
Scope 2 GHG emissions (location-based) (tCO_2e)	96,676 [1,2]	97,707 [1,2]	88,393 [2]
GHG emissions intensity (tCO_2e/€m of revenue)[3]	89.6 [1]	64.1 [1]	41.1
Scope 3 (tCO_2e)	7,731,471	8,688,363	7,286,049
Purchased goods and services	6,603,178 [1,2]	7,387,673 [1,2]	6,288,115 [2]
Capital goods	37,427	47,971	81,264
Fuel and energy related activities	32,736	46,914	49,253
Upstream transportation and distribution	139,623	202,559	153,404
Waste generation in operations	4,607	7,245	5,325
Business travel	23,917	31,100	54,207
Employee commuting	20,669	25,410	26,001
Downstream transportation and distribution[4]	-	-	-
Use of sold products	452,094 [1,2]	484,058 [1,2]	324,621 [2]
End of life treatment of sold products	417,220 [1,2]	455,433 [1,2]	303,859 [2]
Non-HFC process emissions (not included in Scope 1) (tCO_2e)	8,747	8,172	10,499
Zero emission company cars (annual conversion of replacement cars to zero emission cars) (%)	11	28.5	58.4 [5]

Note1: GHG emissions calculations only include manufacturing, assembly and R&D sites on the basis that the amounts excluded are not believed to be material; emissions are estimated at less than 0.5% of overall scope 1 and 2 emissions (market-based).
Note 2: Gases include CO_2, CH_4, N_2O, HFCs. PFCs and SF_6. Emission factor sources: the emission factor set for each site is decided based on the location in which the site is based. Sources include, among others: DEFRA, US EPA, IEA, GHG Protocol. GWP source: IPPC, AR4. Consolidation approach: financial control.
[1]: Restated figures due to improved data collection & change in calculation methodologies.
[2]: GHG emissions were recalculated due to acquisitions that occurred in 2021 & 2022
[3] GHG emissions intensity ratio includes scope 1&2 (market-based) GHG emissions (not including biogenic emissions)
[4] We report outbound transportation and distribution services that we purchase under category 4 (Upstream transportation and distribution) instead of category 9. This is in line with the Greenhouse Gas Protocol's guidance.
[5]: Excluding 2022 acquisitions due to data unavailability at the time of writing.

Appendix 2: Environmental and Social indicators† (cont'd)

	2020	2021	2022
Circularity			
PET bottles recycled into our manufacturing processes (million)	573	844	803
Waste generated (t)	94,658*	113,522*	138,122
Hazardous waste (%)	7*	7*	7
Recycled waste (%)	68	65	63
Waste to Landfill (t)	18,642	17,150*	10,828
Waste to Landfill (%)	20	15	8
Water			
Total water withdrawal (m^3)	437,670*	558,181*	666,209
Third-party water (m^3)	345,436*	416,973*	462,477
Ground Water (m^3)	72,159	120,671*	177,345
Harvested rainwater (m^3)	20,075	20,538	26,387
Air emissions			
NOx (t)	n/a	240	263
SOx (t)	n/a	28	23
Our ratings			
CDP	A+	A-	A-
MSCI	AA	AA	AA
SUSTAINALYTICS	Low risk/ESG score: 17.3	Low risk/ESG score: 17.9	Low risk/ESG score: 17.1
ISS ESG	Prime	Prime	B-

† Boundary for environmental data: Whole business – manufacturing, assembly, and R&D sites. Whole business includes all businesses owned by Kingspan at the end of 2022, including acquisitions.
*: Restated figures due to improved data collection & change in calculation methodologies.

	2020	2021	2022
Sites with ISO certifications[1]			
Number of sites with ISO 9001	75	88	91
Number of sites with ISO 14001	66	78	83
Number of sites with ISO 18001/45001	64	76	82
Number of sites with ISO 50001	20	23	37
Number of sites with ISO 37301	-	9	26
Employee data[1,2]			
Number of employees	15,757	19,384	22,015
Female	19%	20%	21%
Male	81%	80%	79%
Western & Southern Europe	7,898	8,845	9,577
Central & Northern Europe	3,970	5,861	6,827
Americas	2,786	3,411	3,884
Rest of World	1,103	1,267	1,728
Health and Safety[1]			
Health & Safety Investment (€)	4,825,148	7,010,859	8,570,444
Total Recordable Incident Rate (TRIR)[3]	2.43	2.37	2.0
Injury Frequency Rate (p/100k hours)	1.2	1.2	1.0
Fatalities	1	1	0

[1] Boundary: Whole business, which includes all businesses owned by Kingspan at the end of 2022, including acquisitions.
[2] Employee numbers are expressed as head count.
[3] Calculated based on both full-time and contract employees.

Appendix 3: Reporting with reference to the GRI Standards

Statement of use	Kingspan has reported the information cited in this GRI content index for the period 01.01.2022 to 31.12.22 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021

GRI Standard	Disclosure	Location
GRI 2: General Disclosures 2021	2-1 Organizational details	Page 6
GRI 2: General Disclosures 2021	2-3 Reporting period, frequency and contact point	Page 3
GRI 2: General Disclosures 2021	2-4 Restatements of information	A note has been added to all cases where a restatement has been provided
GRI 2: General Disclosures 2021	2-5 External assurance	Appendix 8
GRI 2: General Disclosures 2021	2-22 Statement on sustainable development strategy	Page 4
GRI 2: General Disclosures 2021	2-28 Membership associations	Page 10
GRI 302: Energy 2016	302-1 Energy consumption within the organisation	Appendix 2
GRI 302: Energy 2016	302-3 Energy intensity	Appendix 2
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Appendix 2
GRI 305: Emissions 2016	305-2 Energy indirect (Scope 2) GHG emissions	Appendix 2
GRI 305: Emissions 2016	305-3 Other indirect (Scope 3) GHG emissions	Appendix 2
GRI 305: Emissions 2016	305-4 GHG emissions intensity	Appendix 2
GRI 306: Waste 2020	306-3 Waste generated	Appendix 2

Appendix 4: SASB

Topic	Accounting metric	Section	Comment	Code
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations.	-	This indicator is not applicable. Kingspan is not covered under emissions-limiting regulations.	EM-CM-110a.1
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets.	Environment - Carbon and energy, pages 18-24	Long-term and short-term carbon strategy and targets to manage Scope 1 emissions are outlined in the "Environment - Carbon and energy" section of this Report.	EM-CM-110a.2
Air Quality	Air emissions of the following pollutants: (1) NOx (excluding N2O), (2) SOx, (3) particulate matter (PM10), (4) dioxins/furans, (5) volatile organic compounds (VOCs), (6) polycyclic aromatic hydrocarbons (PAHs), and (7) heavy metals.	Appendix 2	We're currently working on collecting all necessary data and we're hoping to be able to report on this metric in our next report.	EM-CM-120a.1
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage alternative, (4) percentage renewable.	Appendix 2	-	EM-CM-130a.1
Water Management	1) Total fresh water withdrawn, (2) percentage recycled, (3) percentage in regions with High or Extremely High Baseline Water Stress.	Appendix 2	28% of our total water use is in regions with High or Extremely High Baseline Water Stress.	EM-CM-140a.1
Waste Management	Amount of waste generated, percentage hazardous, percentage recycled	Appendix 2		EM-CM-150a.1
Biodiversity Impacts	Description of environmental management policies and practices for active sites.	-	See Kingspan's environmental policy	EM-CM-160a.1
	Terrestrial acreage disturbed, percentage of impacted area restored.	-	This indicator is not applicable to Kingspan. Kingspan does not operate any quarries.	EM-CM-160a.2

Appendix 4: SASB (Continued)

Topic	Accounting metric	Section	Comment	Code
Workforce Health & Safety	(1) Total recordable incident rate (TRIR) and (2) near miss frequency rate (NMFR) for (a) fulltime employees and (b) contract employees.	Appendix 2	Near miss data is recorded at divisional level and we will report on this metric at Group level in the next report.	EM-CM-320a.1
	Number of reported cases of silicosis.	-	This indicator is not applicable to Kingspan. Employees and workers are not exposed to large amounts of crystalline silica dust.	EM-CM-320a.2
Product Innovation	Percentage of products that qualify for credits in sustainable building design and construction certifications.		65% of Kingspan's product revenue contributes directly or indirectly to resource efficiency, such as, lowering carbon emissions or mains water withdrawal.	EM-CM-410a.1
	Total addressable market and share of market for products that reduce energy, water, and/or material impacts during usage and/or production.	-	A 2016 report from Deloitte estimated the Global Insulation Market generated $18.8bn in revenue.	EM-CM-410a.2
Pricing Integrity & Transparency	Total amount of monetary losses as a result of legal proceedings associated with cartel activities, price fixing, and anti-trust activities.	-	Kingspan did not received any fines or sanctions in relation to cartel activities, price fixing, and anti-trust activities.	EM-CM-520a.1

Appendix 5: Climate-related disclosures

Climate Governance

Ultimately, the responsibility of climate related issues falls to Kingspan's CEO. Climate related issues are not considered on a stand-alone basis, they are fully integrated into the business model and strategy of the Group. Kingspan's Planet Passionate strategy has been identified and explained as one of Kingspan's four core strategic pillars. Over 65% of Kingspan's product revenue comes from products which are directly related to resource efficiency, predominantly products which contribute significantly to energy and carbon savings in the built environment. The CEO is the most senior person in the organisation and therefore responsible for driving the business to convert opportunities as they relate to climate change but also strategically prepare for and mitigate against any underlying and emerging climate change risks.

Management's role

Each of our operating businesses are reviewed monthly by the senior management teams across each division, with at least two executive directors, including the CEO. These senior teams have representatives including managing directors, finance, technical, operational and commercial directors. At these business reviews, risks and opportunities that are assessed as significant are brought to the attention of the executive directors and are assessed on a division wide, and potentially Group wide basis. Further, Kingspan senior management team hosts a full, long-term strategic review of the business annually. This review includes all aspects of the business and strategic decisions are made which include any climate-change issues assessed.

Climate-related risks and opportunities

Time horizons

We consider a short-term (2022 - 2027) horizon for assessing climate-related risks and opportunities to be in line with some of our Planet Passionate targets. We also consider a medium-term (2028 - 2032) horizon for assessing climate-related risks and opportunities up to 2032. This time horizon was established in line with the EU 2030 Climate and Energy Framework. Considerations of transitional risks such as policies and technology will be considered along with physical risks. We consider a long term (2033 - 2050) horizon to 2050 in line with the strategy for the transition to a low-carbon economy recognised in the Paris Agreement and EU Low Carbon Economy Roadmap to 2050.

Risks and opportunities

We define substantive financial or strategic impact on our business, as follows:

- **Financial:** Kingspan considers any risk, including climate-related risks, which have the potential to impact group trading profit (EBITA) by 5% or more as substantive. In 2021, for example, that would be any risk that would potentially impact group trading profit (EBITA) by €38 million.
- **Operational:** Kingspan considers any operational risk which has the potential to impact operations of over 5% of the group's trading profit or manufacturing capacity as substantive. In 2021, for example, that would be any risk that would potentially impact trading profit (EBITA) by €38 million.
- **Strategic:** Kingspan considers any strategic risk which has the potential to impact revenues by over 5% as substantive. In 2021, for example, that would be any risk that would potentially impact revenue by over €325m.
- **Reputational:** Kingspan is the market leader in high-performance building envelopes, but we also pride ourselves on our best-in-class service model. Any risk which would significantly impact our ability to deliver against this service level expectation would be considered as substantive. In addition, Kingspan has set itself challenging targets in the areas of energy, carbon, circularity and water, through our Planet Passionate initiatives. Any risk which would substantially impact our ability to deliver against those goals would be considered substantive by Kingspan.

We consider a wide array of risk types in our climate-related risk assessments. These include current and emerging regulation, technology, legal, market, reputation and acute and chronic physical. For more information, please refer to our latest CDP response, available on our website.

Processes for identifying, assessing and responding to climate-related risks and opportunities

There are multiple strands within the business for identifying risks and opportunities (R/O) as they relate to our value chain stages and there are formal monthly updates for escalating R/O to the Group management team, as well as an annual risk review conducted by Internal Audit for the benefit of the Kingspan board's Audit & Compliance Committee. Kingspan employees are represented in trade associations and industry bodies; Kingspan presents and attends major industry tradeshows; its employees are in discussions with Government and regulatory officials to ensure the management team remains fully appraised of emerging regulation; our commercial teams liaise with customers, building owners, design teams and architects daily and feed back any potential risks or opportunities from market demand changes or new technologies. Risks and opportunities are escalated through the chain on consultation with next level management, these R/Os are assessed as to whether they are substantive, and further escalated to business unit and divisional reviews where relevant. Identified risks and opportunities are assessed for substantive financial or strategic impact (greater than our defined threshold level of €38 million on EBITA). The effect of revenue-related risks and opportunities on EBITA are estimated, and cost-related effects are calculated by multiplying specific effects (e.g., cost increase per MWh or per ton of CO_2 or raw material) by volume.

Risks

1. **Substitution of existing products and services with lower emissions options:** Kingspan's strategy is to be the global leader in innovative building envelope solutions which reduce the resource consumption of buildings, lowering the long-term running costs and

Appendix 5: Climate-related disclosures

the environmental impacts of those buildings. Innovation is a key facet to our strategy and Kingspan has market leading products, particularly in the field of building insulation. Failure to innovate ahead of our competitors is a risk to our business model. We invest approximately one per cent of revenue annually in research and development and digital transformation, which gives us significant scale in innovation versus our peers. Should a competitor bring a higher performing insulation technology – in terms of thermal performance- to market, it could impact revenue in that product range. Kingspan's energy efficient insulation products account for over 60% of revenue.

2. **Changing customer behavior:**
Kingspan's product portfolio consists of products which make a positive impact on resource efficiency, particularly in relation to in-use energy and carbon saving benefits. The embodied carbon of our insulation products is insignificant relative to the impact of carbon saved through our products' lifetime in use. We recognise the need to minimise the carbon produced due to the manufacture our products, much of which comes from the raw materials. To be a market leader in carbon efficient solutions, we have targets to realise significant carbon reductions in both our manufacturing process and via our primary raw material supply partners.

3. **Emerging regulation – carbon pricing mechanisms (upstream):**
As a global leader in high-performance insulation and building envelope solutions, we rely on a global network of suppliers, from raw material to the transportation companies that deliver our products to our customers. Any carbon related policy changes affecting our suppliers could affect our cost of production if the suppliers pass through a percentage of the (increased) carbon price to Kingspan. As our emissions from our purchased goods and services account for almost 80% of our total value chain emissions, we have set an ambitious target aiming to achieve a 50% reduction in CO_2e intensity of the primary raw materials supplied to Kingspan by 2030. Our approach to date has been to actively engage with our suppliers on this issue to better understand their strategies, challenges, and potential areas of collaboration.

4. **Emerging regulation – carbon pricing mechanisms (direct operations):**
One of the EU's objectives is to reduce emissions from industry, which accounts for 20% of the EU's carbon emissions. Legislation being introduced to help reduce emissions includes revising the EU emissions trading system (EU ETS) and having national emissions targets outside of the EU ETS (we're already paying carbon tax in several countries where we operate). While it is not yet clear what mechanisms will be used at a national level to achieve the emissions reduction targets, Kingspan is already taking steps - in line with our Planet Passionate strategy - to reduce our emissions. Kingspan is an industry leader in manufacturing products which help to mitigate climate risk in the construction sector. We take this leadership position very seriously and have set ourselves industry leading targets with respect to our own carbon emissions. Kingspan has targeted net zero carbon manufacturing, globally, by 2030. This is a commitment which has not only resonated very strongly with our customers but will also improve the resilience of our business for the long-term. Kingspan has 118 manufacturing facilities in the EU (including the UK) and therefore a significant number of our sites will be covered by any initiatives introduced in the EU to achieve emissions reduction targets.

5. **Acute physical – flood:**
Kingspan recognises the potential negative impacts represented by increased severity and frequency of extreme weather events such as cyclones and floods due to climate change. Its facilities are globally spread but consideration is given to potential acute physical events at local level. Kingspan assesses its exposure to acute physical climate related risks (such as increased flooding) through regular reviews, audits and self-assessment questionnaires. At Group level, a risk mapping exercise was undertaken using the Water Risk Filter tool. We also assessed the physical risk of our key suppliers' main manufacturing sites, and none of them is at risk of flooding or any other acute physical risks. Even though we don't expect any major disruptions in our supply chain, we will continue to monitor and assess the situation.

Opportunities

1. **Use of public sector incentives:**
Only 3% of buildings in Europe were classed as highly energy efficient by a BPIE study (2017) indicating the extensive level of renovation that will be required across Europe. Aligned with the ambition of the Renovation Wave initiative, a revision of the Energy Performance of Buildings Directive (EPBD) is currently underway which will review specific aspects such as the phased introduction of mandatory minimum energy performance standards for all types of buildings (public and private), an update of the framework for Energy Performance Certificates, the introduction of Building Renovation Passports and the introduction of a 'deep renovation' standard in the context of financing and building decarbonisation objectives. A key facet within the renovation wave is to improve the energy efficiency of the building envelope. Kingspan's world class, ultra-performance insulation products are ideally suited for renovation given that dimension can be a key constraint in refurbishment. We have published several reports on how investment in premium insulation an immediate and significant return can have when dimension is considered. Kingspan's advanced insulation offers significant thermal outperformance versus fibre

Appendix 5: Climate-related disclosures

type insulation materials, thereby offering an enhanced dimension solution for the refurbishment market.

2. **Development and/or expansion of low emission goods and services:**
We invest approximately 1% of revenue annually in research and development and digital transformation and we have significant scale in innovation versus our peers. Kingspan's innovation effort has led to breakthrough products such as QuadCore and Kooltherm. QuadCore is an insulated panel technology which is almost 20% more thermally efficient than a traditional PUR (polyurethane) core panel. Kooltherm is an insulation board technology which is almost twice as efficient as traditional mineral fibre type insulation. These innovative products and future innovative products, such as PowerPanel (an integrated insulated roof panel with solar technology) will continue to differentiate Kingspan from our competitors and help to drive adoption of advanced materials to bring down the energy consumption of buildings. Kingspan targets each of QuadCore and Kooltherm to be 50% of their relative portfolios within the next 4 years.

3. **Access to new markets:**
Kingspan recently invested in new territories including Iberia, Latin America and India. Each of these markets is at a much earlier stage than Kingspan's more developed markets in terms of adoption of high-performance insulation materials. We have opened a new facility annually in Brazil since entering the market in 2017. Over time, Kingspan will help to develop these markets and to educate building owners and regulators to the benefits of high-performance insulation and thermally efficient building envelopes.

4. **Development of climate adaptation, resilience and insurance risk solutions:**
Our strategy is to convert construction methods from inefficient, traditional technologies to high-performance, energy efficient technologies. We help regulators, building owners, architects and design teams to understand not only the considerable efficiency pay back from an investment in thermal performance, but also the strategic importance of positioning yourself as a responsible business with your stakeholders. similar aims, we can expect renovation policies and support measures to be in focus. The conversion to high-performance, energy efficient building envelopes, from traditional construction methods, has been a successful strategy for Kingspan for decades. This strategy has helped to drive a Compounded Annual Growth Rate (CAGR) of over 17% in revenue since 1994, well in advance of construction macro growth. Kingspan's current balance of products and markets, coupled with increasing regulation, offer significant opportunity for this conversion strategy to continue to deliver organic growth above market growth.

5. **Participation in renewable energy programs and adoption of energy-efficiency measures:**
At Kingspan we understand that the built environment has an important part to play in tackling climate change, and we pledge to lead by example in both our products and our operations. Through its 10-year Planet Passionate programme, Kingspan aims to futureproof its operations by significantly reducing the company's carbon footprint by continuing to reduce its energy demand through energy efficiency and rapidly increasing its use of renewable energy (both from the grid and from on-site generation). Kingspan, via its Planet Passionate 2030 energy targets, aims to increase direct renewable energy use to 60% of total energy use, to generate the equivalent of 20% of total energy demand on-site and to install solar PV systems on all wholly owned sites.

How climate-related risks and opportunities have influenced our strategy

- **Products and services:** Kingspan recognises climate-related risks and opportunities in its products and services strategy. Kingspan is the market leader in high-performance insulation technologies, enabling building designers and building owners to design and construct buildings which save energy and associated carbon through their operation over their lifetime. In 2016, Kingspan announced its strategy to 'Complete the Envelope'. This strategy was to build out our portfolio of products which complement our low carbon building envelope solutions. At that time, we identified natural daylighting products, natural ventilation products, ducting and piping insulation products, and roofing membrane products as the categories in which we aimed to develop. Each of which would enable us to expand our advanced building envelope solutions to our customers. We identified potential weaknesses in the thermal efficiency of building envelopes by integrating multiple supplier solutions and secondary processes as opposed to single fix, compatible products, which Kingspan could offer. Our most substantial strategic decision to date has been to build out our Light + Air division, which offers natural daylight solutions and natural ventilation solutions. Both of which help to reduce the energy consumption of buildings by reducing the need for artificial lighting and mechanical ventilation.

- **Supply chain:** We recognise the need to minimise the carbon emitted due to the manufacture of our products, much of which comes from raw materials in our value chain. We acknowledge the potential risk to revenue if customers seek out lower embodied carbon alternatives and the risk of potential higher costs of materials due to higher energy/carbon prices in the future. To be a market leader in carbon efficient solutions, we took the decision to transform our Net Zero Energy strategy to become our Planet Passionate strategy which

Appendix 5: Climate-related disclosures

sets targets and strategies to realise significant carbon reductions in both our manufacturing process and via our primary raw material supply partners. Kingspan has made two public commitments to reduce Scope 3 emissions, i) Planet Passionate target: 50% CO_2 intensity reduction in products from primary supply partners by 2030 from a 2019 baseline, and ii) a verified SBT.

- **Investment in R&D:** Climate-related risks and opportunities are core elements of Kingspan's Research and Development (R&D) investment strategy. Innovation is one of Kingspan's key strategic pillars. As a manufacturer of climate-mitigating low-carbon technologies, our innovation agenda is centred around creating products which reduce the carbon emissions of the built environment. We recognise Innovation both as a risk and an opportunity in the short-, medium- and the long-term. Kingspan invests approximately 1% of revenue annually on R&D and digital transformation which gives us significant scale advantage in innovation versus our peers. The most substantial strategic decision taken to date has been to invest in a global centre of excellence for innovation, IKON, at Kingspan's Group Headquarters in Ireland. This centres innovation as a groupwide function with a Global Head of Innovation reporting directly to the CEO.

- **Operations:** Strategy in Kingspan business operations has been influenced by climate change risk planning, predominantly as it relates to mitigating against climate change to reduce risks of direct and indirect operational cost increases related to the cost of energy and/or carbon taxes over the medium-term. Many of the countries in which Kingspan operates have already implemented carbon pricing mechanisms, with more countries expected to implement carbon taxes or pricing mechanisms in the future. In addition, in line with meeting the objectives of the Paris Accord, we expect increases to the current carbon taxes or pricing mechanisms.

Appendix 6: TCFD – Recommendations and supporting recommended disclosures

Governance **Disclose the organization's governance around climate-related risks and opportunities.**		
Recommended Disclosures	Section	Page
a) Describe the board's oversight of climate-related risks and opportunities.	Appendix 5	55
b) Describe management's role in assessing and managing climate-related risks and opportunities.	Appendix 5	55
Strategy Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Appendix 5	55
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Appendix 5	55
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Appendix 5	55
Risk Management Disclose how the organization identifies, assesses, and manages climate-related risks.		
a) Describe the organization's processes for identifying and assessing climate-related risks.	Appendix 5	55
b) Describe the organization's processes for managing climate-related risks.	Appendix 5	55
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Appendix 5	55
Metrics and Targets Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.		
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Appendices 2 and 5	50, 55
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Appendix 2	50
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Carbon and energy, Planet Passionate	16-24, 31-32

Appendix 7: The EU Taxonomy

Kingspan is a global supplier of high-performance building envelope solutions. The Taxonomy Regulation (2020/852/EU) establishes an EU framework for the classification of environmentally sustainable economic activities and requires, under Article 8, Kingspan to disclose information on how and to what extent its activities are associated with environmentally sustainable economic activities. These disclosures are based upon what we believe are reasonable assumptions but, as there is no established practice for reporting under the Taxonomy Regulation and the nature of the relevant disclosure obligations is novel, these disclosures are, by their nature, subject to uncertainties.

Taxonomy Eligible and Aligned Turnover

Numerator: Included in the numerator for taxonomy eligible and aligned activities[2] are activities under Annex I – 3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings. The difference between eligible and aligned turnover reflects products for which there is no technical hurdle defined, or products which don't meet the requisite technical hurdle.

Key assumptions:

- Insulated pipework for district heating has been included under Annex I, 3.5.

Denominator: Kingspan's total revenue as disclosed in our 2022 preliminary results and in Note 2 of our 2022 Annual Report[1].

Taxonomy Eligible and Aligned Operational Expenditure

Numerator: Items in the denominator relating to taxonomy eligible and aligned activities.

Denominator: Direct non-capitalised costs that relate to research and development, building renovation measures, maintenance, and repair. Other direct expenditures relating to day-to-day servicing of assets of property, plant and equipment are not included as they are not recorded separately, cannot be readily approximated and are not considered material. The difference between eligible and aligned operating expenditure reflects expenditure related to products or services for which there is no technical hurdle defined, or which don't meet the requisite technical hurdle.

Operating expenditures are included in 'Cost of sales' and 'Operating costs excluding intangible amortisation' as per the Consolidated Income Statement on page 138 of our Annual Report1 with detail on the total R&D expense of €60.3m in Note 6 of our 2022 Annual Report[1].

Taxonomy Eligible and Aligned Capital Expenditure

Numerator: Items in the denominator relating to taxonomy eligible and aligned activities.

Denominator: Additions to tangible, including IFRS 16 Right of Use Assets, and intangible assets during the financial year considered before depreciation, amortisation, and any re-measurements, including those resulting from revaluations and impairments, for the relevant financial year and excluding fair value changes (Notes 11, 12 and 17 of the 2022 Annual Report[1]). The denominator shall also cover additions to tangible and intangible assets resulting from business combinations as defined in Note 23 of our 2022 Annual Report[1]. Goodwill is not included in the denominator. The difference between eligible and aligned capital expenditure reflects expenditure related to products or services for which there is no technical hurdle defined, or which don't meet the requisite technical hurdle.

[1] https://ks-kentico-prod-cdn-endpoint.azureedge.net/kingspan-live/kingspanglobal/media/financial-updates-2023/kingspan-annual-report-2022-pdf.pdf
[2] as defined by REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 June 2020, Article 10

DO NOT SIGNIFICANT HARM

DNSH to 'Climate change mitigation'

Kingspan makes a substantial contribution to climate mitigation, primarily through the manufacture and sale of insulating products used in the construction of buildings. Insulation systems manufactured by Kingspan in 2022 will save an estimated 173 million tonnes of CO_2e over their lifetime.

DNSH to 'Climate change adaptation'

Kingspan includes both acute and physical risk types in its climate-related risk assessments and its climate-related scenario analysis. Kingspan recognises the potential negative impacts represented by increased risk of flooding due to climate change and consideration is still given to potential chronic physical risks impacting our business in the future. Kingspan assesses its exposure to acute and chronic physical climate related risks (such as increased flooding and droughts) through regular audits and self-assessment questionnaires, updated on an annual basis by the Group level sustainability and Divisional health & safety teams. Kingspan is working to identify ways to integrate additional climate change adaptation considerations in its climate-related risk assessments going forward.

DNSH to Biodiversity

Kingspan bases its development on the respect for people and the environment. As a global provider of systems and solutions for the construction sector, Kingspan is aware of the potential impact of human activities on the planet and recognises climate change as a considerable threat to biodiversity globally. We are currently mapping our manufacturing locations to determine if they are in close proximity to biodiversity-sensitive areas. To ensure continuous protection of specific biodiversity-sensitive areas, we will be assessing more closely our environmental management programmes at relevant sites and strengthening them where deemed necessary.

DNSH to Water Resources

Due to the nature of Kingspan's business, water does not constitute a material input for most of our manufacturing sites. Nevertheless, recognising the importance of this precious resource, we aim to manage it in the most responsible manner possible. We aim to maximise water conservation using rainwater harvesting and other water saving initiatives such as sensor systems and water-flow regulators.

Kingspan monitors water consumption to identify areas for improvement and

Appendix 7: The EU Taxonomy

continues to develop procedures and investigate technologies that will help minimise the withdrawal of ground water on site and water from municipal water supplies, as well as mitigating the impact of wastewater released from sites.

In 2022, we conducted a water scarcity assessment covering all of our manufacturing facilities. The assessment determined that 58 manufacturing, assembly and research and development sites were located in areas of high or extremely high-water stress. These facilities represent 28% of our water use. We have rainwater harvesting systems installed in 36 of our sites (17%). We will continue to prioritise working with affected facilities to implement water efficiency improvements and rainwater harvesting where possible.

DNSH to 'Pollution prevention and control regarding use and presence of chemicals'

In the manufacturing activities that Kingspan undertakes and which fulfil the criteria set in the Taxonomy regulation as to mitigating climate change – under activity listed as manufacturing of energy efficiency technologies for buildings chapter 3.5 – our activity complies with the above listed criteria for Do No Significant Harm.

Our manufacturing activity does not use or produce any substances listed in the regulations under points (a) to (d).

Regarding the REACH regulation, substances used by Kingspan are currently not restricted as per Annex XVII dossier or required to be authorised as per Annex XIV – points (e) and (f).

Point (g) of Annex XIV refers to the criteria set in REACH article 57 on how to identify a substance of very high concern.

Formaldehyde is classified as CMR , and is in the process of being restricted in consumer products, whereas industrial products are covered by worker protection rules. There are exposure limits for workers set at EU level. Formaldehyde is used in the manufacture of phenolic resins which subsequently form phenolic foams (e.g. Kooltherm). In the final product there is very little residual formaldehyde left and hazard thresholds are not breached. Additionally, the Taxonomy regulation Annex 1 itself refers to formaldehyde emissions from the final product in buildings under the activity of renovation of existing buildings 7.2, stating that Do No Significant Harm requires: *Building components and materials used in the building renovation that may come into contact with occupiers[2] emit less than 0,06 mg of formaldehyde per m³ of material or component upon testing in accordance with the conditions specified in Annex XVII to Regulation (EC) No 1907/2006 and less than 0,001 mg of other categories1A and 1B carcinogenic volatile organic compounds per m³ of material or component, upon testing in accordance with CEN/EN 16516 or ISO 16000-3:2011[3] or other equivalent standardised test conditions and determination methods.*

Methylene diphenyl diisocyanate (MDI) is similarly a building block for polyurethane (PU) and polyisocyanurate (PIR) foams. It is both a skin and respiratory sensitiser and products where MDI is present above a certain limit need to have a warning text and come with protective gloves. This level is not reached in foam products manufactured by Kingspan.

Kingspan products comply with the limits as described in Annex XVII. As such, Kingspan concludes it does no significant harm as it relates to point (g) regarding the use of formaldehyde and MDI.

Circular Economy

Kingspan is embedding circularity principles throughout its operations and product development processes. We are also working on several strategies to further develop circularity principles within our products at manufacture stage and at end of life. The majority of our product portfolio is durable and long-lasting. Some products can be easily disassembled and contain high quantities of recycled materials. As part of our Planet Passionate programme, we have set three circularity targets, aiming to reduce our waste to landfill and increase our use of recycled materials. We have reduced our waste to landfill by 42% from a 2020 base year.

Minimum Safeguards

Kingspan is fully committed to the highest standards as it relates to human and labour rights, bribery, taxation and fair competition.

In late 2021 we subscribed to EcoVadis as a supplier management platform, to help us monitor and track the environmental, social and governance performance of our suppliers. To date we have received scorecards which cover 41% of our key suppliers by spend. For those suppliers which may not have the resource to complete an EcoVadis review, we are developing a due diligence process, in line with OECD and UN guidelines for multinational enterprises. We expect this due diligence process to be rolled out globally through 2023.

We are also in the process of conducting a Human Rights Risk Assessment globally.

As these processes are underway rather than complete, we have taken the decision to declare zero percent EU Taxonomy alignment for Kingspan for Financial Year 2022, with the expectation that we will more toward the eligibility percentage by Financial Year 2023.

[1] Having carcinogenic, mutagenic or reprotoxic properties.
[2] Applying to paints and varnishes, ceiling tiles, floor coverings (including associated adhesives and sealants), internal insulation and interior surface treatments (such as to treat damp and mould).
[3] ISO 16000-3:2011, Indoor air — Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air — Active sampling method (version of [adoption date]: https://www.iso.org/standard/51812.html).
[4] The emissions thresholds for carcinogenic volatile organic compounds relate to a 28-day test period.

Appendix 7: The EU Taxonomy

Proportion of Revenue, OpEx and CapEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2022

				Substantial Contribution		Do No Significant Harm							
				Climate change mitigation	Climate change adaptation	Climate change mitigation	Climate change ad-aptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosys-tems	Minimum safeguards	Taxonomy aligned proportion (%)
Taxonomy Eligible Activities													
Revenue	Comment	€m	Proportion of total revenue (%)	Weighting (%)									
Total		8,340.9	100										
3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings	Eligible and aligned according to technical criteria.	4,364.4	52	100	-	Y	Y	N	Y	Y	N	N	0
3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings	Eligible but not aligned as technical hurdle not yet established for this revenue set.	698.7	8	100	-	Y	Y	N	Y	Y	N	N	0
OpEx		€	Proportion (%)	Weighting (%)									
Total		144.6	100										
3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings	Eligible and aligned according to technical criteria.	110.2	76	100	-	Y	Y	N	Y	Y	N	N	0
3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings	Eligible but not aligned as technical hurdle not yet established for this revenue set	5.2	3	100	-	Y	Y	N	Y	Y	N	N	0
CapEx		€	Proportion (%)	Weighting (%)									
Total		629.0	100										
3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings	Eligible and aligned according to technical criteria	249.1	40	100	-	Y	Y	N	Y	Y	N	N	0
3.5. Manufacturing of energy efficiency equipment for buildings, 3.6. Manufacture of other low carbon technologies, 7.1. Construction of new buildings and 7.2 Renovation of existing buildings	Eligible but not aligned as technical hurdle not yet established for this revenue set.	23.4	4	100	-	Y	Y	N	Y	Y	N	N	0

Appendix 8: Assurance statement

LRQA Independent Assurance Statement

Relating to Kingspan Holdings (Irl) Limited's Environmental Data Assertion for the calendar year 2022

This Assurance Statement has been prepared for Kingspan Holdings (Irl) Limited in accordance with our contract but is intended for the readers of this Report.

Terms of engagement

LRQA was commissioned by Kingspan Holdings (Irl) Limited (Kingspan) to provide independent assurance on its environmental data assertion ("Assertion") against the assurance criteria below to a limited level of assurance and materiality using ISO 14064 - Part 3 for greenhouse gas data.

Our assurance engagement covered Kingspan's operations and activities under its financial control and specifically the following requirements:

- Verifying conformance with:
  - World Resources Institute / World Business Council for Sustainable Development Greenhouse Gas Protocol: A corporate accounting and reporting standard, revised edition (otherwise referred to as the WRI/WBCSD Protocol) for the GHG data[1]
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below: [2]
  - Direct (Scope 1) including biogenic emissions, Energy Indirect (Scope 2) and Other Indirect (Scope 3) GHG emissions
  - Total energy use
  - Percentage of wholly owned facilities with installed solar PV systems
  - On-site renewable energy generation
  - Water withdrawal
  - Rainwater harvested
  - Waste generation and waste to landfill
  - Annual conversion of company replacement cars to Electric Vehicles (EV)
  - PET bottles recycled into Kingspan's manufacturing processes.

Our assurance engagement excluded the data and information of Kingspan's suppliers, contractors and any third-parties mentioned in the Assertion.

LRQA's responsibility is only to Kingspan. LRQA disclaims any liability or responsibility to others as explained in the end footnote. Kingspan's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of Kingspan.

[1] *http://www.ghgprotocol.org/*

[2] *GHG quantification is subject to inherent uncertainty.*

LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that Kingspan has not, in all material respects:

- Met the requirements above
- Disclosed accurate and reliable performance data and information as summarised in Table 1 below.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Table 1. Summary of Kingspan's Assertion for CY 2022:

Type	Quantity	Units
Scope 1 GHG emissions[2]	340,406	Tonnes CO_2e
Biogenic Scope 1 GHG emissions[2]	26,531	Tonnes CO_2e
Scope 2 GHG emissions (Location-based)[1,2]	88,393	Tonnes CO_2e
Scope 2 GHG emissions (Market-based)[1,2]	44,750	Tonnes CO_2e
Scope 3 GHG Emission Categories[3]: C1: Purchased goods & services C2: Capital goods C3: Fuel & energy related C4: Upstream transport & distribution C5: Waste generated in operations C6: Business travel C7: Employee commuting C11: Use of sold products C12: End-of-life treatment of sold products	 C1: 6,288,115 C2: 81,264 C3: 49,253 C4: 153,404 C5: 5,325 C6: 54,207 C7: 26,001 C11: 324,621 C12: 303,859	Tonnes CO_2e
Non-HFC Process Emissions (not included in Scope 1 emissions)	10,499	Tonnes CO_2e
Total Energy Use	837	GWh
On-site renewable energy generation	59.1	GWh
% of wholly owned facilities with installed solar PV systems	35.2	%
Water withdrawal	666,209	m^3
Rainwater harvested and consumed	26,387	m^3
Waste generation	138,122	Tonnes
Waste to landfill	10,828	Tonnes
Annual conversion of company replacement cars to Electric Vehicles (EV)	58.4	%
PET bottles recycled into Kingspan's manufacturing processes	803,038,391	-

Note 1: Scope 2, Location-based and Scope 2, Market-based are defined in the GHG Protocol Scope 2 Guidance, 2015
Note 2: GHG emissions were calculated using Global Warming Potentials from IPCC AR4.
Note 3: Scope 3 is defined in the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, 2011

LRQA's approach

LRQA's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- reviewing processes related to the control of environmental data and records,
- interviewing relevant employees of the organization responsible for managing environmental data and records; auditing Kingspan's data management systems to confirm that there were no significant errors, omissions or misstatements in the Assertion, and
- verifying historical environmental and records at an aggregated level for the calendar year 2022.

Observations

Further observations and findings, made during the assurance engagement, are:

- Materiality:
  We are not aware of any material issues concerning Kingspan's Assertion that have been excluded from the data set.
- Reliability:
  Data management systems are considered to be well-defined, but implementation of the systems was slightly variable at a non-material level. This indicates a need to further strengthen internal audit of data flows.

LRQA's standards, competence and independence

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 *Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition* and ISO/IEC 17021 *Conformity assessment – Requirements for bodies providing audit and certification of management systems* that are at least as demanding as the requirements of the International Standard on Quality Control 1 and comply with the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants.

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

Graham Colebeck — Dated: 13 February 2022

LRQA Lead Verifier
On behalf of LRQA Group Limited, 1 Trinity Park, Bickenhill Lane, Birmingham, B37 7ES

LRQA reference: LRQ00003522/5017422

LRQA its affiliates and subsidiaries, and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'LRQA'. LRQA assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant LRQA entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
The English version of this Assurance Statement is the only valid version. LRQA assumes no responsibility for versions translated into other languages.
This Assurance Statement is only valid when published with the Report to which it refers. It may only be reproduced in its entirety.

PLANET PASSIONATE

kingspan.com

Kingspan

Procured & generated renewable electricity



Renewable electricity



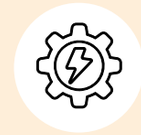
Renewable liquid fuels



Renewable gas



Electrification



Large scale on-site generation

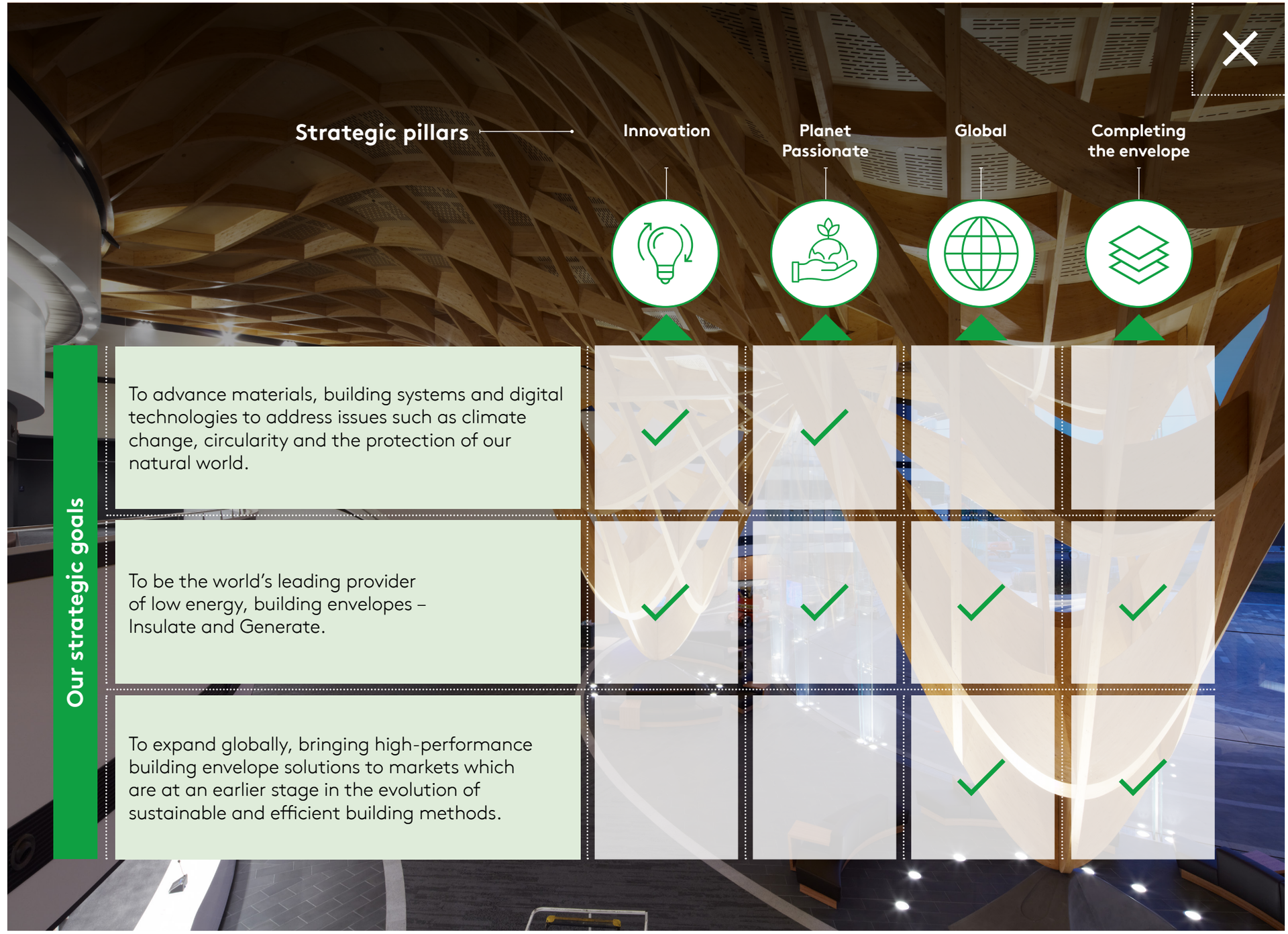


Removal of high GWP blowing agent

Strategic Goals

Our mission is to accelerate a net-zero emissions future built environment with people and planet at its heart.

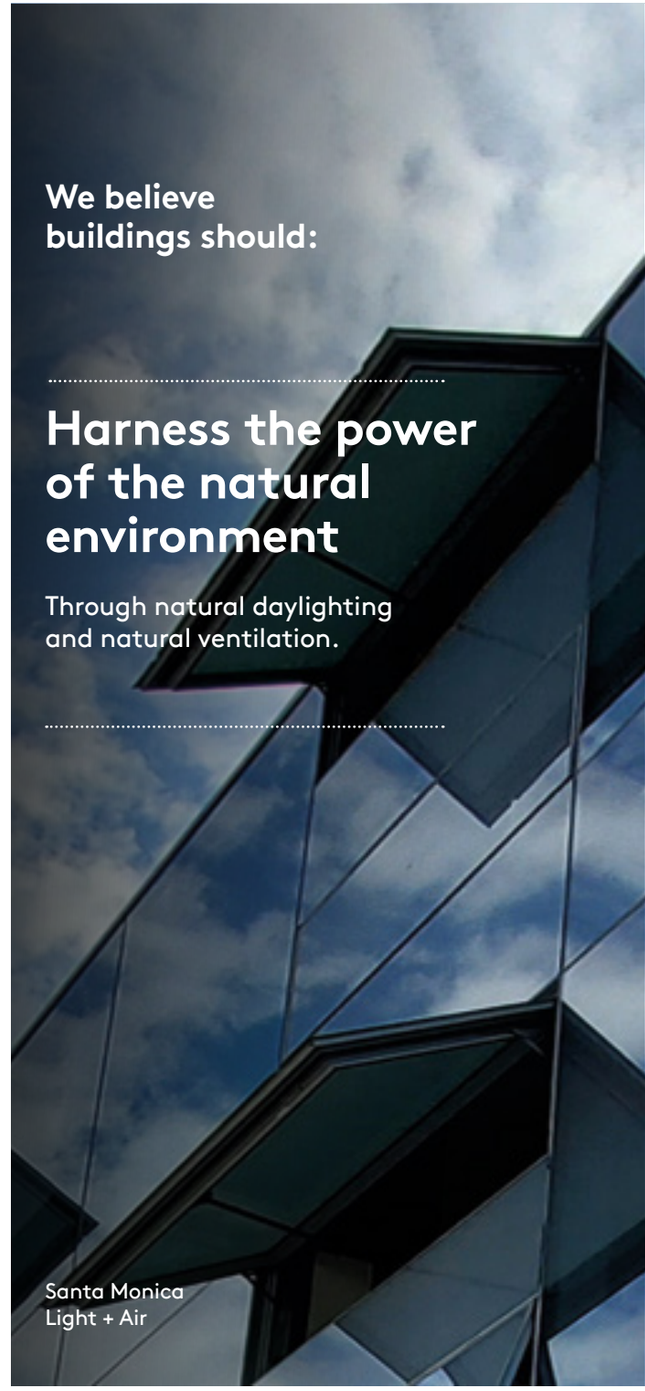
Our core values of honesty, integrity, and compliance with the law, are the foundations upon which our strategic pillars sit.



What we do - Completing the envelope

Through our range of high-performance building envelope solutions, we are uniquely placed to facilitate the decarbonisation of the built environment which is today responsible for almost 39% of global energy related CO_2 emissions.

We try to make this a reality through our solutions; we have six main business streams that combine to create high-performance building envelopes with superior energy-efficiency at their core.



We believe buildings should:

Harness the power of the natural environment

Through natural daylighting and natural ventilation.

Santa Monica
Light + Air



Generate their own renewable resources

Through solar energy, rainwater harvesting and wastewater treatment.

Rainwater Harvesting Tanks
Araquari, Brazil



Conserve energy and reduce GHG emissions

Through ultra energy efficient building envelopes and building services.

IKON Innovation Centre
Cavan, Ireland

Insulated Panels:

Revenue:
€5,181.5m (+23%)
Employees:
10,130
Scope 1&2 energy emissions[1]:
44,964 tCO_2e

Kingspan Insulated Panels is the world's largest and leading manufacturer of high-performance insulated panel building envelopes. Powered by Kingspan's proprietary and differentiated insulation core technologies, a Kingspan panelised envelope provides building owners with consistently superior build quality and lifetime thermal performance compared with built-up constructions using traditional insulation.

PowerPanel™ is part of our Insulated Panels division. It is an engineering innovation from Kingspan which has integrated our QuadCore™ insulated panel with solar technology, enabling a single fix installation of high-performance insulated panel with solar power generation.



Insulation:

Revenue:
€1,658.3m (+40%)
Employees:
4,424
Scope 1&2 energy emissions[1]:
46,117 tCO_2e

Kingspan is a world leader in rigid insulation board. Our advanced insulation technologies deliver superior thermal performance and air-tightness when compared with traditional insulation, resulting in thinner solutions that offer multiple advantages including more internal floorspace and daylight.

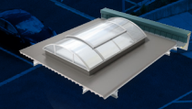
Kingspan has innovative, ultra-performance products in both piping insulation and ducting insulation. In 2021 we extended our exposure in industrial insulation to pre-insulated pipes which service the district heating segment. Industrial insulation is a segment which contains significant opportunity for Kingspan to expand in the future.



Light + Air:

Revenue:
€700.7m (+27%)
Employees:
3,446
Scope 1&2 energy emissions[1]:
3,738 tCO_2e

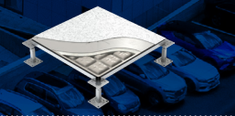
Kingspan Light + Air is established as a global leader providing a full suite of daylighting solutions, as well as natural ventilation and smoke management solutions, which complement our existing building envelope technologies. Thermal comfort, indoor air quality and natural daylighting are widely recognised as the most important factors affecting occupant wellbeing in buildings.



Data + Flooring:

Revenue:
€360.1m (+33%)
Employees:
715
Scope 1&2 energy emissions[1]:
3,534 tCO_2e

Kingspan is the world's largest supplier of raised access flooring and data centre airflow management systems. Raised access flooring is the most cost-effective way of creating a flexible working environment by utilising the floor void to manage the distribution of M&E services and HVAC systems. Our systems have many benefits including optimising overall building height, achieving faster construction with greater design flexibility, enabling easier reconfiguration of a workspace, and improving indoor air quality.



Water + Energy:

Revenue:
€287.1m (+10%)
Employees:
1,449
Scope 1&2 energy emissions[1]:
5,888 tCO_2e

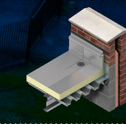
Sustainable water management is rapidly becoming one of the greatest challenges of our time. We manufacture and support pioneering new technologies to preserve and protect water. Kingspan is also a market leading manufacturer of innovative energy management solutions.



Roofing + Waterproofing:

Revenue:
€153.2m
Employees:
1,851
Scope 1&2 energy emissions[1,2]:
51,898 tCO_2e

In 2022 Kingspan established its Roofing + Waterproofing division through the acquisition of Ondura Group and Derbigum. Roofing has been a targeted area of expansion as a complementary category to our energy efficient building envelope solutions. We will offer single component membrane solutions and supply roof systems incorporating membrane and insulation, giving our customers increased warranty protection, from a single trusted supplier.



[1]: Scope 1&2 GHG emissions do not include biogenic emissions. Scope 2 GHG emissions were calculated based on the market-based methodology.
[2]: GHG emissions for our Roofing + Waterproofing division were recalculated to include the whole financial year 2022 based on the "all-year" option as presented by the GHG Protocol.

Governance

The Kingspan Board recognises that the values, integrity and behaviours that shape our culture and corporate governance are the foundation of long-term success. Our Board strives to continue to enhance our corporate governance practice and disclosure to ensure we not only meet the standards expected of us but, more importantly, we promote the success of the business for all of our stakeholders. At the heart of those efforts is an entrepreneurial Board that adheres to high standards of governance.

The Board

The Board of the Company is responsible for the leadership, strategic direction and overall management of the Group. It sets the Company's strategic aims, establishes the Company's values and standards, and monitors compliance within a framework of effective controls.

The Board currently consists of twelve directors: four of the directors are executives, eight (including the Chairman), are non-executive directors. Each of the executive directors have a combination of general business skills and experience in the construction materials market. The non-executive directors represent a diverse business background complementing the executive director's skills.

Leadership
The Board meets formally 6 times during the year, as well as informally as and when required. The Board reserves for itself a formal schedule of matters on which it takes the ultimate decision. These include adopting the Group's rolling 5 year strategic plan and the annual budget, approving all major capital expenditure and material contracts, acquisitions and disposals of businesses and other assets, and appointment of senior executives and succession planning, reviewing management's corporate and financial performance, and overall review of the Group's internal controls. Certain other matters are delegated to the Board committees.

Full details of the Company's compliance with the UK Corporate Governance Code (July 2018), as enhanced by the Irish Corporate Governance Annex is set out in the **Company's Annual Report**.

The Board currently consists of 12 directors: four of the directors are executives, 8 (including the Chairman), are non-executive directors.

Board-level committees

Audit & Compliance
The Board has established an Audit & Compliance Committee to monitor the integrity of the Company's financial statements, and the effectiveness of the Company's internal financial controls. The members of the Audit & Compliance Committee bring considerable financial and accounting experience to the committee's work, and in particular the chairman of the Audit & Compliance Committee, Michael Cawley, has appropriate recent and relevant financial experience. The Board considers that the combined qualifications and experience of the members give the committee collectively the financial expertise necessary to discharge its responsibilities.

Remuneration
The Remuneration Committee has responsibility for setting remuneration for all executive directors and for the Chairman, including pension contributions and any compensation payments. The committee also monitors the level and structure of remuneration for senior management.

Nominations
The Nominations Committee assists the Board in ensuring that the composition of the Board and its committees is appropriate for the needs of the Group. The committee meets at least once a year, and additionally if required, to consider the Board's membership, to identify any additional skills or experience which might benefit the Board's performance and recommend appointments to or, where necessary, removals from, the Board.



Training and development

Yours to Shape - Graduate Attraction and Development

To continue to build leadership pipelines Kingspan continued to invest in our global graduate attraction and development programme called Yours to Shape. Over 190 graduates have completed the programme since it was launched in its current format. The programme's objective is to support the successful transition of graduates from university to Kingspan Group, create an international collaborative network within the Group and develop their capabilities to drive their career in Kingspan forward. As a result of the global attraction campaign, 45 participants were hired for all divisions around the world. It is clear from the attraction campaign that Graduates are consistently attracted to Kingspan for the Groups active and practical focus on sustainability.

This year we continued to attend University Career Fairs in-person and virtually across all regions. In line with our Planet Passionate goals, to offset our carbon emissions produced by attending each of these Career Fairs, we partnered with Naturefund to plant a tree in Costa Rica for every person who registered their interest in our Graduate Programme at each Career Fair. This provided the students with an opportunity to give back to the planet and make a difference in the fight against climate change. As a result, we are committed to planting 500+ trees in Costa Rica on behalf of students across the globe.

The development programme spans 12-months of virtual and in-person workshops and assignments, peer coaching and masterclasses with senior executives. In 2022 the first half of the programme was all delivered virtually and by the second half in-person learning events were possible. Graduates visited our Joris Ide Group Head Quarters in Belgium as well as continuing their in-person learning workshops.

Each year the graduates work in cross-functional, regional teams and work on diverse business projects. The criteria for projects are that they must be innovative, align to Kingspan strategic priorities, which include sustainability, and have a commercial benefit. In 2022 six projects were showcased to senior leaders in IKON – our global innovation centre in Ireland - and the presentations were live streamed to our facilities around the world. The level of innovation and the integration of sustainability into the projects was inspiring. The projects will be taken forward for further assessment with an aspiration of integration into the existing product range. Divisions have also taken forward innovative ideas to conserve energy and reduce waste.

The Yours to Shape programme is a key pillar for Kingspan's leadership development strategy. As talented people continue to join and develop fulfilling careers the longer-term high performance of the Group is safeguarded.



Click here to find out more about our Kingspan Group Graduate Program

Programme for Executive Acceleration in Kingspan - PEAK

The PEAK programme was launched in 2018 and continues each year. This is an accelerated development programme focused on supporting the transition to a more senior leadership position. The core objective of the programme is to deepen Kingspan's leadership bench-strength to match the increasing scale and global nature of the business. An executive business sponsor partners with participants during the programme, sharing leadership challenges and encouraging open discussion to learn together. Over 125 executives have participated in PEAK with over 50% of participants being promoted in the business soon after completing the programme. PEAK strengthens cross divisional relationships, as well as enabling further integration of executive talent from recent acquisitions.



Developing Leaders as Coaches

During 2022 Kingspan continued the Developing Leaders as Coaches (DLAC) programme. This is a cross divisional programme that focuses on developing leaders' coaching capability with the outcome of being more effective in critical people conversations. This has led to the development of a Kingspan Code of Coaching, which clarifies the rules of engagement and aligns with the company's core values and Code of Conduct. In Q4 of 2022 we rolled out a Developing Leadership Coaching Capability Programme similar to DLAC. This time it was an international programme hosting participants from Ireland, UK and throughout Europe. We will continue to roll out this programme next year to ensure the ongoing development of formal coaching skills and consistency of practice globally. In parallel, we continue to assign internal coaches and mentors to sponsor high potential managers with particular emphasis on accelerating emerging female leaders to senior leadership positions.



Born Free

Born Free's mission is to stop the exploitation and suffering of individual animals living in captivity or in the wild. It promotes Compassionate Conservation which strives to enhance the survival of threatened species in the wild, protect natural habitats, and support communities living alongside wildlife, whilst respecting the needs and safeguarding the welfare of individual animals.

Kingspan and Born Free

The three-year partnership, which ends in December 2022, emphasises the work that Born Free conducts in Kenya around lion population security – a species that is very close to the ethos and brand of Kingspan. Kingspan provide vital funds to Born Free to help with essential work such as monitoring, collaring and de-snaring. It also supports Born Free in its work with rural communities close to lion territories, promoting the message of coexistence and providing practical solutions to potential conflict.



One prominent activity is the Pride of Meru Project, which currently comprises a team of five: the Project Head, Project Officer, 2 scouts and a driver. The Project is designed to help lion numbers increase in Meru National Park, with a view to mirroring the efforts in neighbouring Kora National Park.

The three-year summary

29,926 km
lion monitoring survey effort

76
catalogued lions

25
births in Meru prides

832
Community members participated in the socioeconomic questionnaire

3,637
herbivore sightings

1,408
carnivore sightings

Understanding the effect of climate change

Drought has been particularly severe recently, forcing many people to turn to remaining resources in protected areas to stop their livestock from dying. The rivers around Meru have dried up and for communities that are already living in poverty or on the brink of economic hardship, the prolonged drought has devastated families. Partly, as a result of this, the Pride of Meru team saw 97 occasions where livestock was driven by pastoralists into the protected area to find suitable grazing lands.



The seasonal rains finally arrived in Meru, providing some relief. However, the erratic nature of the rains and prolonged droughts are probably due to climate change and it's important to gain greater insight into them. Born Free is keen to understand their effect on communities and wildlife and therefore will be recruiting a consultant to help navigate the increasing challenges. They also recently ran a workshop to inform citizen scientists of the scope of their work and build the potential for lion monitoring.

Mapping home ranges



Getting to know the home ranges of the lion prides is essential in understanding lion movement and improving lion protection. In January 2022, the Pride of Meru team received collars that will provide invaluable spatial data; they are currently waiting for approval by the Kenya Wildlife Service before they are deployed.



Seabin™

Seabin™ is an Australian founded clean tech start-up that has developed an innovative hardware unit and Ocean Health Data Platform. This involves the removal and data cataloguing of plastics and other marine debris from waterways.

Seabin™

We have a 3-year partnership with Seabin which commenced in 2021. As part of this, we're supporting the day-to-day operations and running of two Seabin units: one in Sydney Harbour and another one in Marina Del Rey, Los Angeles, which has come on stream during summer 2022.

This includes:

- **Daily collections by the Seabin Smart City Enviro-technician**
- **Data collection, analysis, and reporting**
- **Community engagement and education**



Kingspan Sponsored Unit Sydney Harbour:

Jones Bay Wharf is classified by Seabin™ as a 'High Volume Marine Litter Accumulation Point'. The partnership with Kingspan will result in almost 1.3 tonnes of marine debris – the equivalent of 31,000 plastic straws – being collected from the water each year.

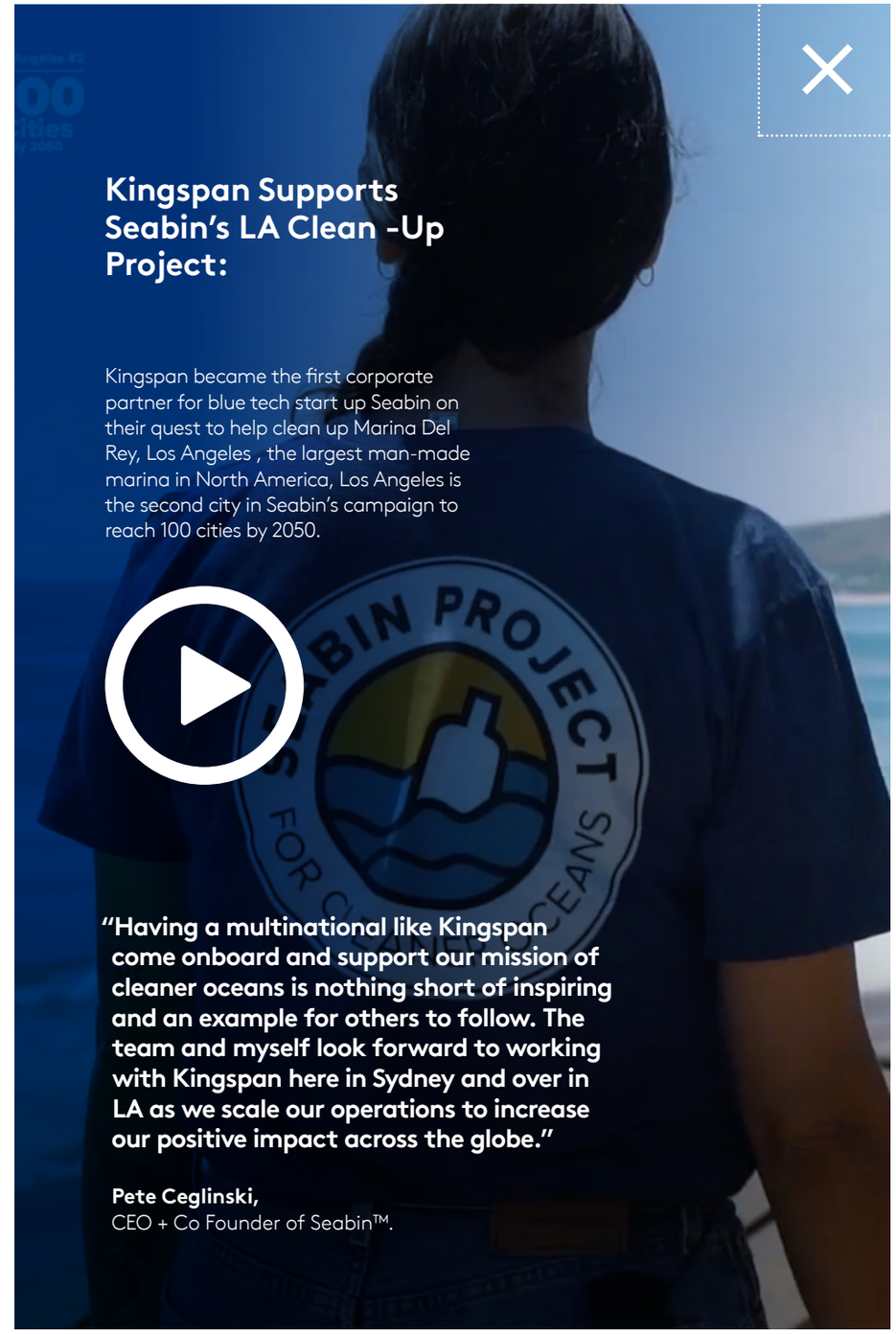
Kingspan's Ocean Health Impact Report November 2021-November 2022

227 million
litres of water filtered[1]

1,337.5 kg
Estimated total capture of marine litter[2]

94,530
Estimated number of plastic items captured (all plastic items including microplastics) [3]

[1]Estimated total based on an assumption that the units had zero downtime or malfunction throughout the reporting period.
[2]Estimated total capture of marine litter calculated using the daily average data derived from site specific data collections.
[3]Estimates for plastic items captured are extrapolated using information from site specific data collections.



Kingspan Supports Seabin's LA Clean -Up Project:

Kingspan became the first corporate partner for blue tech start up Seabin on their quest to help clean up Marina Del Rey, Los Angeles , the largest man-made marina in North America, Los Angeles is the second city in Seabin's campaign to reach 100 cities by 2050.

"Having a multinational like Kingspan come onboard and support our mission of cleaner oceans is nothing short of inspiring and an example for others to follow. The team and myself look forward to working with Kingspan here in Sydney and over in LA as we scale our operations to increase our positive impact across the globe."

Pete Ceglinski,
CEO + Co Founder of Seabin™.

Case Study:
Jessup
Solar PV

Project details
Location:
Maryland, United States
Division:
TATE US
Generation Source:
Solar PV
Generation Capacity:
561kWp
Estimated Annual Generation:
700 MWh

"The solar PV installation was a great team win for Tate Jessup and will provide for the majority (~55%) of the electrical energy needs of that site. The team even overcame some late-breaking structural issues where our internal structural engineers and welders assisted in rapid mitigation to prevent any additional installation delays."

Brad Kampbell
Director of Operations
TATE US



1,169
PV Modules Installed

700 MWh
Estimated Annual Generation

Click to play video

Case Study:

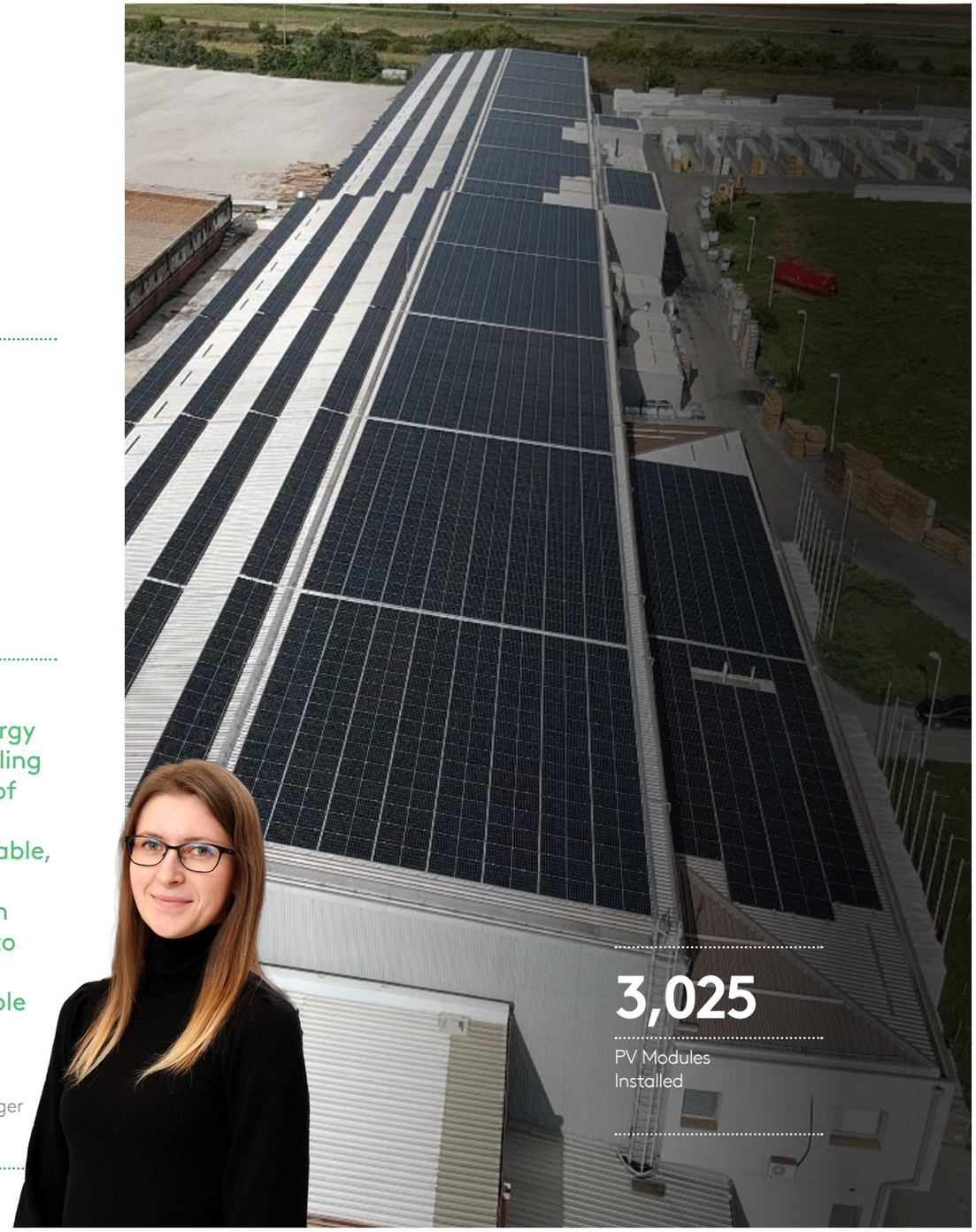
Leskovac

Solar PV

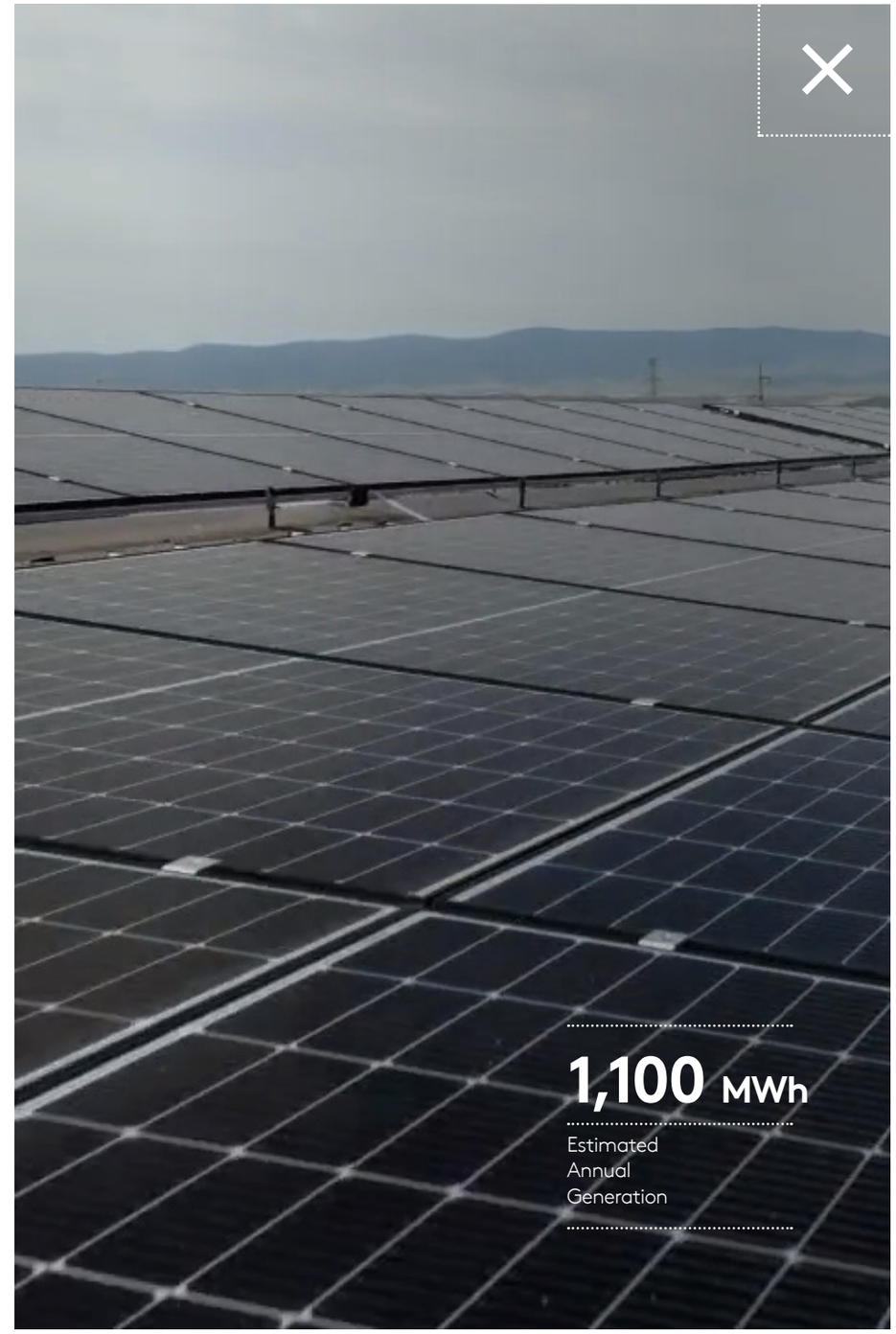
Project details
Location:
Leskovac, Serbia
Division:
Insulated Panels CEE
Generation Source:
Solar PV
Generation Capacity:
1,130kWp
Estimated Annual Generation:
1,100 MWh

"Solar energy has an important role in our energy transition strategy. Installing 3,025 panels on the roof of our Leskovac factory will ensure a supply of renewable, low emissions energy for our production. With such projects, we are striving to make our manufacturing processes more sustainable and independent."

Lenka Vycitalova
Planet Passionate Executive Manager
Insulated Panels CEE



3,025
PV Modules Installed



1,100 MWh
Estimated Annual Generation

Case Study:

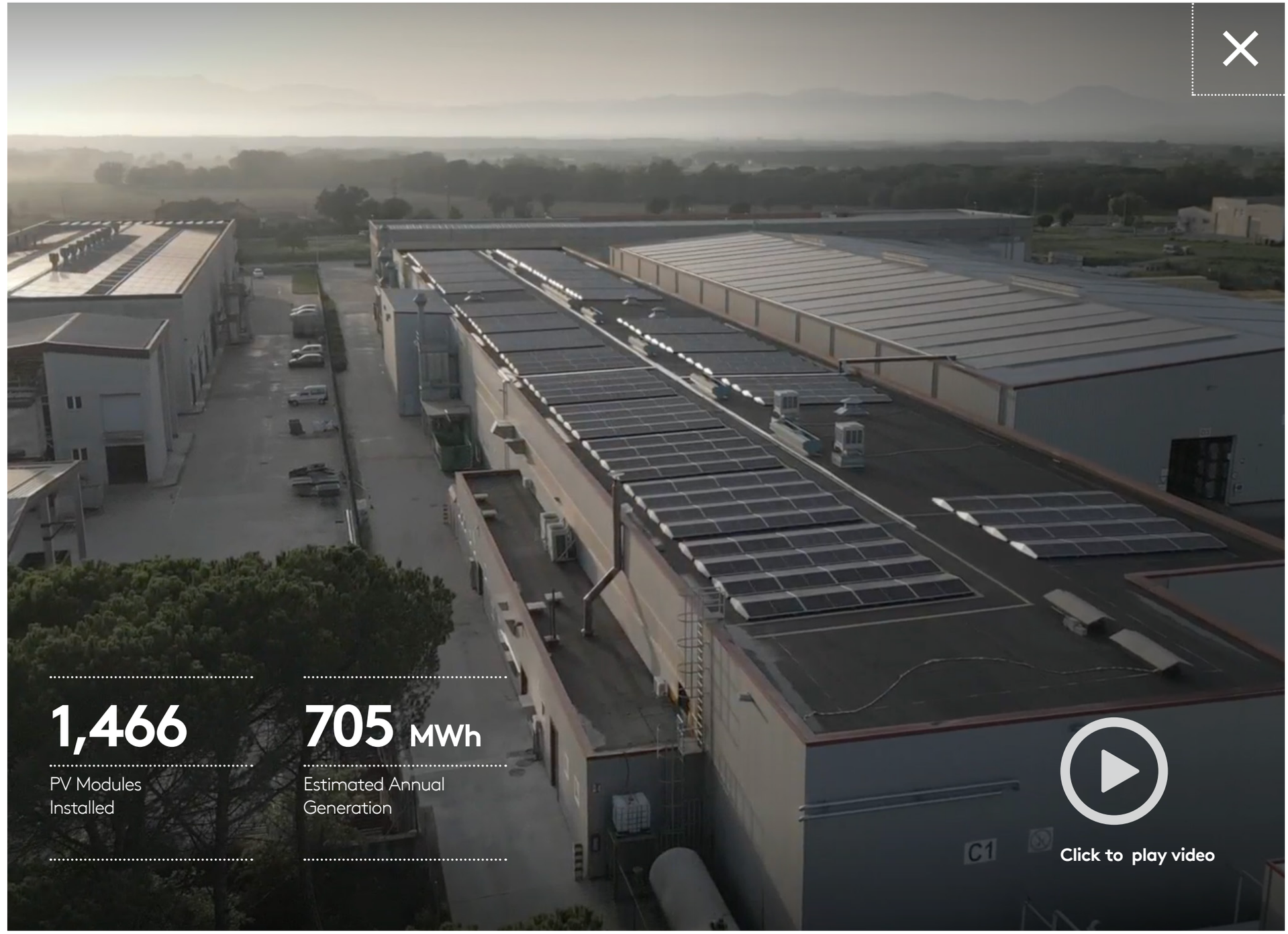
Cassà de la Selva

Solar PV

Project details

Location:
Girona, Spain
Division:
Insulation
Generation Source:
Solar PV
Generation Capacity:
730kWp
Estimated Annual Generation:
705 MWh

In December 2022, the Cassà de la Selva facility within the Insulation division installed a Solar PV system which comprises of 1,466 photovoltaic panels spanning 3,400m².



Case Study:
Solar PV Extensions

Solar PV extensions are key to our energy transition. With our Planet Passionate target to ensure all wholly owned facilities have Solar PV it is crucial to maximise potential energy generation from our wholly owned sites. Here we are highlighting three projects that have been extended during 2022.

"To meet our Planet Passionate on-site generation target, we must maximise the generation capacity through solar PV systems. Therefore, in 2022 we extended our solar PV system on our Insulated Panel manufacturing site in Girona".

Mark Harris
Planet Passionate
Chairperson





Project details
Girona: Insulated Panels West extend their Solar PV system in Girona with an additional 152kWp.



Project details
Baicoi: Joris Ide acquired a site with Solar which was extended in 2022 by 240kWp.



Project details
Location:
Bolszewo, Poland
Division:
Joris Ide
Generation Source:
Solar PV
Generation Capacity:
852kWp
Estimated Annual Generation:
902 MWh

In May 2022, the second phase of the Solar PV system was installed on the roof of one of the production halls in Bolszewo, Poland. The additional system capacity of 852kWp was added with the total system capacity of 902kWp. The full system now comprises of 2,028 of modules fully installed and commissioned and covers 5,050 m² of the roof area.

This is the first stage of creating our own green energy system, which is to be ultimately built in all Balex Metal locations in Poland and abroad.

Case Study:
Renewable Electricity & Fuel

The largest contribution to our Carbon and Energy targets comes from the conversion of non-renewable electricity and fossil fuel contracts to renewable alternatives. In 2022, we converted 24 electricity contracts and 9 fuel contracts with the potential to contribute 80 GWh renewable energy and to save up to 28,000 tCO_2e, annually.

"100% of the electricity supplied to our Winchester site is certified and will be generated from the production of renewable energy. "

Richard Wenham
Divisional Buyer for
Kingspan Insulation





Primagaz
Joris Ide Division:
Belgium

"In 2022, we succeeded in converting our existing LPG supply in 3 of our production sites to BioLPG. By choosing a sustainable alternative, we are contributing to our goal of achieving Net zero carbon manufacturing and consuming 60% direct renewable energy by 2030. "

Laurence Stalmans
Planet Passionate Leader
Joris Ide





Renewable Electricity Contract
Insulation Division:
Winchester, United States

Being able to promote the generation and development of renewable energy in the US is hugely important. Kingspan's Winchester plant is the largest single site consumer of electricity across all manufacturing locations globally, at almost 25 GWh per annum. As such it was vital that we could work with our local provider, Rappahannock Electric Cooperative to procure certified renewable energy from the grid. However, the outright purchase of renewable electricity is not common in the US, and it took the development of a unique approach with support from local government to achieve this goal.

In 2022, a new contract was put in place and from July, 100% of the electricity supplied to this site is certified and will be generated from the production of renewable energy from the sources described in §56-576 of the Code of Virginia. Hopefully this is the first of many such contracts, as it highlights the benefit to US generators and retailers alike, of the move to renewable energy sources.

Case Study:

Insulated Panels, West Division

Waste Segregation

Keeping materials in use within the economy, either as a product, component or raw material, is one of the principles of the circular economy and is also a crucial strategy to divert waste from landfill. In Insulated Panels, West Division, our efforts to meet the Zero Waste to Landfill target are focused on three principles: employee education, waste audit and end-of-life solutions.

Employees on the shop floor play a critical role in diverting waste from landfill as proper on-site segregation has proven to reduce the amount of contaminated waste that ends up in landfill. In 2022, we wrote and released a manual designed to provide information on how to reduce, reuse and recycle materials on site. We regularly work with the marketing team to design employee informational materials such as waste labels and waste segregation posters that are then distributed on the shop floor with the aim of encouraging proper segregation.

We work closely with our site managers and waste contractors to audit our waste - this is a crucial step to identifying areas of improvement and increasing recycling rates, and explore new avenues for our waste streams thus diverting them from landfill. For instance, we are exploring end-of-life solutions for our wood waste, which include recycling it to make new products, thus reducing the need for virgin raw materials.

"We are exploring end-of-life solutions for our wood waste, which include recycling it to make new products, thus reducing the need for virgin raw materials."

Roberta Nicastri
Divisional Sustainability Advisor
Insulated Panels West



Lean Design for Circularity

Embedding lean design principles within product design strategies is a crucial first step in improving the circularity of our product portfolio. We are actively working on several initiatives in our business, with our suppliers and with industry partners.

COOL DH supports cities in their endeavour to plan and deploy new, efficient district heating and cooling (DHC) systems. COOL DH is an abbreviation of Cool ways of using low grade Heat Sources from Cooling and Surplus Heat for heating of Energy Efficient Buildings with new Low Temperature District Heating (LTDH) Solutions. The COOL DH consortium consists of the utilities and municipalities of two cities Lund (SE) and Høje-Taastrup (DK), leading DH energy specialists and leading industrial manufacturers.

To date, a heat recovery pipe solution has been developed and tested through deliveries of a Low temperature district heating system and heat recovery solutions to a demonstration site in Sweden.

As part of the project, Kingspan Logstor, developed a new product utilising PE-RT, a recyclable thermoplastic, instead of the typically used PEX. The use of the alternative material has benefits during manufacturing and end of life of the product as it requires a reduced number of processes and can be readily recycled.



Input materials

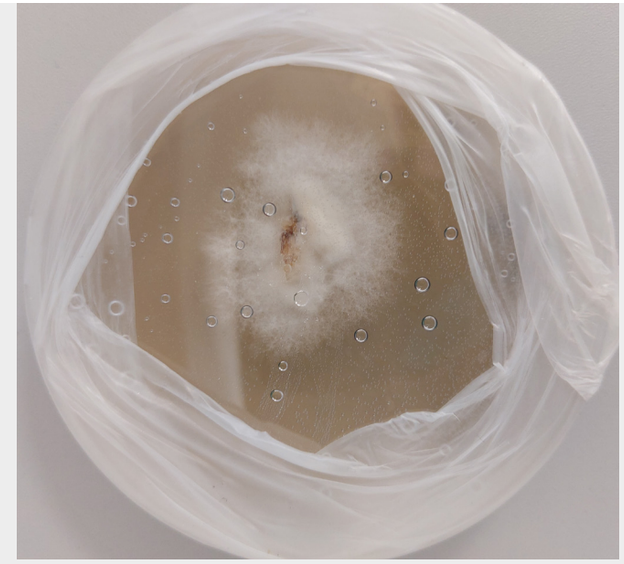
One of our key challenges is to increase the recycled content of our products, and where appropriate, the use bio-based materials, without compromising quality or performance. Our teams are exploring new material composition and bio-based chemistry solutions aiming to find suitable, lower environmental impact alternatives.



Light + Air: Recycled blue water bottle project
Investigating the use of polycarbonate recycled from blue water bottles.



Polyol with >40% recycled content
Synthesia development of high recycled content polyol for use in next generation roofboard insulation.







Research & Development of bio-based materials

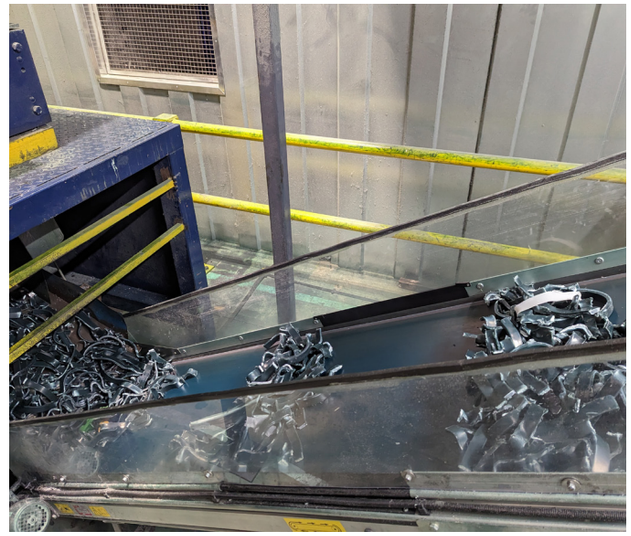
The research and development team at IKON Innovation Centre, Kingscourt are actively engaged in research to develop an insulation board product made from predominately bio-based materials. This product would complement our current product range and would be biodegradable and compostable. We are currently investigating several materials include mycelium and hemp.

Mycelium is the root structure of a mushroom or in other words fungi. We are exploring how to transform this material into an innovative insulation product given its excellent thermal and acoustic properties, and that it could be 100% recycled at end of life.

Hemp is one of the world's fastest growing plants. It can be processed to create a soft fibrous insulation material with excellent insulating and thermal characteristics. Our research is investigating several other bio-based materials with the aim of bringing a suite of bio-based insulation products to the market in the coming years.

Factory processes

Resource efficiency is at the core of a circular economy. In line with circular economy principles and our Planet Passionate targets, we aim to improve the overall resource efficiency of our manufacturing processes including minimisation of waste generation. Where it is not possible to avoid manufacturing waste, scraps and cut offs are grinded, pelletised and introduced into the manufacturing process. We also aim to ensure said manufacturing processes do not interfere with potential reuse or recycling solutions for unavoidable waste generated during production.



Material Efficiency:
Water + Energy Division

Materials transition is one of the core focus areas for Kingspan Water & Energy sustainability strategy. While we continue to improve the efficiency of our manufacturing processes, we can currently re-introduce production offcuts and scraps into the production of new tanks. This prevents waste going to landfill and avoids additional use of virgin material. Our water tanks are currently manufactured with up to 70% regrind content and we are currently testing tanks made of 100% regrind material. We are also reviewing the resource efficiency of our product design and have achieved a 20% reduction in material use in the production of some of our plastic tanks. Moving forward, our goal is to manufacture products made of 100% post-consumer recycled content and/or bio-based content.

"AS A FIRST STEP, WE ARE FOCUSED ON DECREASING OUR USE OF VIRGIN MATERIALS AND VOLUME OF MATERIALS NEEDED TO PRODUCE OUR PRODUCTS."



Project Hawkeye: Insulation

Project Hawkeye is a project that has been presented as part of the Graduate Yours to Shape programme in September 2022. The project presents an AI quality assurance tool that tracks quality metrics on the manufacturing line which helps to improve processes, increase customer satisfaction, and reduce waste on Kingspan processes worldwide. The project is based on groundbreaking technology advancements made in the last 10 years that allow us to retrieve information about our product from a video film in real time. This can be seen in the video above which displays a camera system for a Kingspan PIR production line in Miami, Florida. Product height and presence of defects on the panel are being monitored in real time using the camera system.

Mark Klimek tells us of when he was a process technician in a previous job, how stressful and time consuming it was to be constantly checking process lines for variations and defects. This was because every second a defect was not caught resulted in another second of wasted product produced that would be scrapped or repurposed. The solutions advertised in project Hawkeye offer real-time detection of this process, saving money on operator time, equipment downtime, defective products, customer satisfaction and much more.

Sources including Amazon Web Services have confirmed that implementations of these "Computer-Vision" systems have increased productivity (defect reduction) by 50% and detection rates by 90%. Based on conservative estimates, we estimate that each vision system that we install will save Kingspan around $60,000 and just over 2,400m^2 of scrap per year. Regarding future work for this project, the team are currently in the process of presenting a project plan to the Insulation Division to begin system roll out.

"Project Hawkeye offers an efficient, inexpensive, and impactful quality assurance tool. Computer-Vision solutions detect product defects in real time, helping process owners reduce waste, save money, and reduce reoccurring issues. Solutions like the proof-of-concept built in KINA Miami have the potential to eliminate an average of 2,400 m^2 of waste per year per application installed. The product is scalable with wide ranging implications and applications."

Mark Klimek
Development Engineer
Kingspan Insulation



Extended Life Models & Reuse

Extended life models for construction products can take many forms, some of which require a number of systems to be in place to enable such models. In 2022, we continued investigation of potential takeback schemes to expand the current takeback schemes in place in the UK and central Europe regions, which takeback insulation installation waste solutions to prolong the lifetime of our products and materials, to add circular value to our value chain and provide new services to our customers and supply partners.

Interview with Tommy Martin

1. Why is it key to develop end of life models for construction products?

The construction industry has a major role to play in the sustainable future of our planet. The construction industry is responsible for 39% of global energy related carbon emissions: 28% from operational emissions, from energy needed to heat, cool and power them, and the remaining 11% from materials and construction.* By incorporating circular design principles upfront in construction product design, we can focus on selecting suitable materials and processes to minimise the embodied carbon and the end of life impacts of construction products. There are many different methods to enabling extended life models for construction products such as designing for recyclability, reusability, and disassembly. By ensuring potential extended life models are considered at product design stage, we can enhance the product performance, minimise waste and encourage the development of reuse and refurbishment solutions for building materials at the end of a building's life.

2. What approach is being taken within R&D to progress the development of extended life product models?

Here at our IKON Innovation Centre, we have incorporated Sustainable Design Resources into our product development stage gate process. The stage gate process assists our R&D engineers with initial scoping and conceptual design. The inclusion of the Sustainable Design resource within this process ensures the environmental impact of the products' full lifecycle is considered from the beginning of the project. The sustainable design resource has been developed to support the design of new products and re-design of existing ones. The resources embed the principles of circularity and put the focus on aspects of design including input materials, design for reuse or recycling and product embodied carbon.

3. In your opinion, what are the biggest barriers to developing extended life models in construction.

Aligning the complete supply chain at an early stage in new developments is critical in ensuring extended life models can be implemented. As the components and materials forming part of a complete product typically come from upstream and our customers and end users are responsible for the product once sold, it is key that all stakeholders are engaged to enable such models. Close collaboration and development with our upstream and downstream stakeholders are an important part of any new development.

4. In your opinion, what opportunities does this challenge provide?

Although there can initially be hesitance in exploring new materials, processes, technologies, etc. the benefits to be gained in offering unique and future proofed product sets creates great commercial opportunities and enhances the future for the full construction industry to contribute positively to our planet.

* Source.

Tommy Martin
Divisional R&D Manager
Insulated Panels West





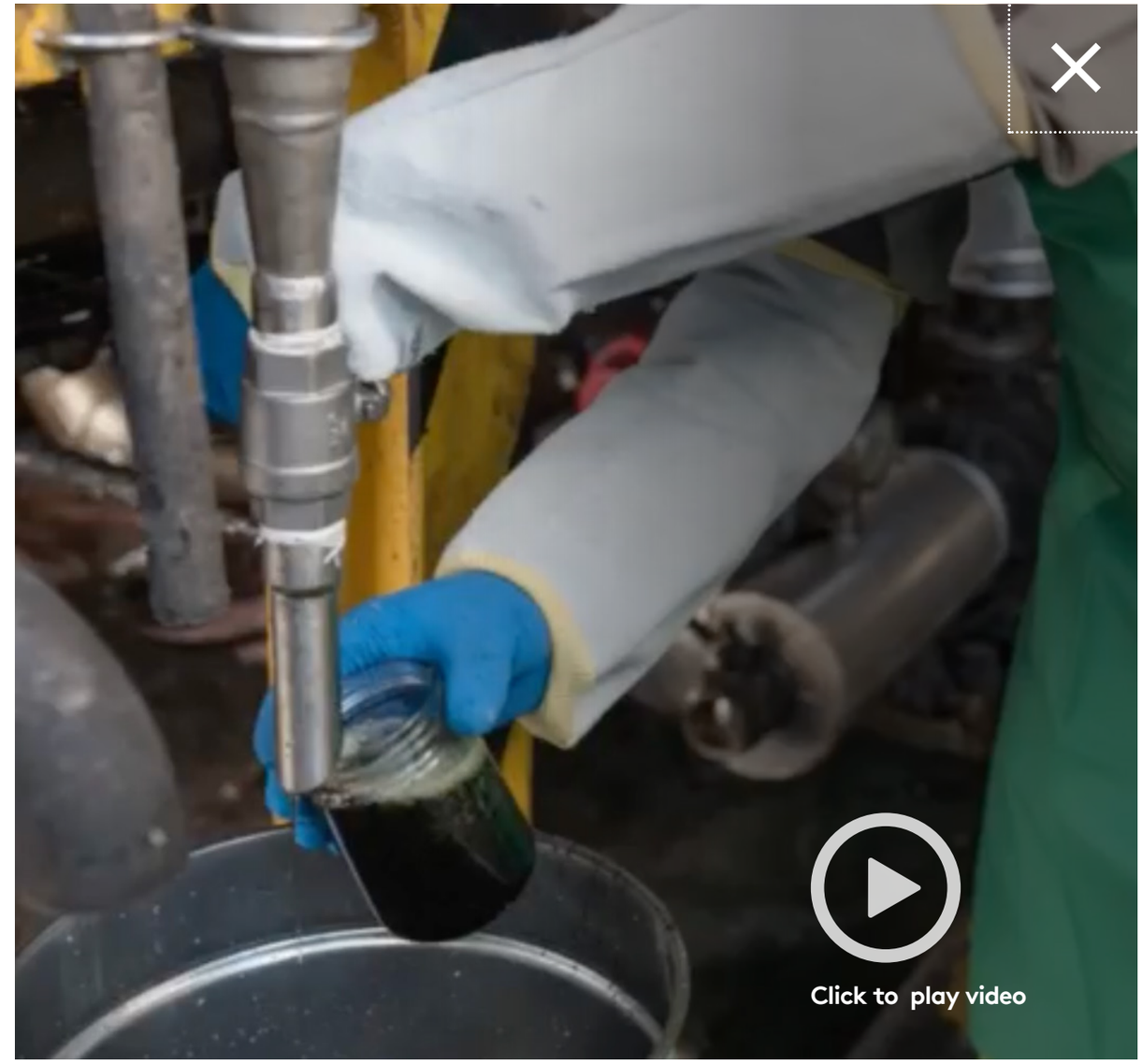
Cycling

Where feasible, we strongly advocate for reuse over recycling. However, as this is not always possible, we are also exploring and implementing cycling options to keep materials within the economy. We have ongoing projects to develop and implement chemical and mechanical cycling solutions for products and materials at each stage of production, installation and end of life.



Kingspan Isoeste Insulated Panel Mechanical recycling

In 2022, Kingspan Isoeste started a project to recycle its PIR insulation waste from the manufacturing of insulated wall and roof panels. Several types of agglomerates and different moulding processes were tested until we reached the ideal model for our business. We acquired equipment that transforms PIR waste into slabs for civil construction - a product widely used in Brazil and normally made of EPS. Since the equipment was installed, we are diverting 100% of the PIR waste from 1 of the 5 facilities and manufacturing 4,000 slabs per month. This new ECOPIR slab product has superior mechanical properties when compared to those of EPS, which has pleased our customers. In 2023 we plan to acquire more equipment to recycle the waste of the other production sites.



Recycling of insulation foam waste into raw materials

In 2022, production waste was evaluated from several insulated panel and insulation board manufacturing sites. A full scale industrial trial was successfully completed in Castellbisbal to make polyol containing up to 25% recycled foam waste with the total recycled content of the new product up to 57%.

Case Study:

Red Lion

Rainwater Harvesting

Project details
Location:
Pennsylvania, United States
Division:
TATE US
Project Type:
Rainwater Harvesting System
Annual Capacity:
6.5ML
Tank Size:
208,000 litres

"Tate's investment into the Rainwater Harvesting system at the Red Lion facility is starting to show great savings. We have been able to capture 1.8 million litres of rainwater which was utilised to make the concrete required to fill over 1 million access floor panels."

Steve Englar
Manufacturing Support Manager
TATE US



Case Study:

Belter Tech

Mechanical Recycling

Insulated Panel North America are experimenting with new ways to keep its insulation production waste in use within the economy. They have recently partnered up with Atlanta based Belter Tech, a manufacturer of sustainable building materials made from reclaimed waste products and recycled feedstocks. For the past two years, Belter Tech have been repurposing PIR (polyisocyanurate) insulated panel waste from its Deland facility into a filler for their cementitious mixes.

The process begins with insulation waste being granulated and used as a filler in new innovative construction products. Applications include an insulative concrete fill with superior r-value and sound transmission values. Belter Therm®, which makes use of our PIR production waste, is used to create Belter Tech Cem-Rock SIM system (Structural Insulated Magnesium) which contains 66% recycled content. Additionally, Kingspan insulation waste is manufactured by Belter Tech into fire-retardant panel board products that are currently being used by the film industry in Georgia.



BELTER TECH®
Sustainable Building Solutions

"We've been working with Kingspan on their Planet Passionate programme for the last two years. It's been great to see a company of their stature helping to eliminate landfill diversion and continuing the growth of circularity in our industry. Kingspan's sustainability team is second to none. They are consistent in their goals, which are reflected across the whole company. We are delighted to continue our partnership and look forward to the future. Our company's motto is "let's close the loop together" and our work with Kingspan personifies that approach."

Gerald Hughes
Founder and CEO, Belter Tech



