

PLANET PASSIONATE REPORT 2021



PLANET
PASSIONATE

kingspan.com



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ABOUT THIS REPORT

This is Kingspan Group Plc's ("Kingspan") second annual Planet Passionate report (the "Report"), which covers the period 01.01.2021 to 31.12.2021. The previous report was published in April 2021 and is available on our website.

Unless stated otherwise, progress against our targets and other key metrics are disclosed for our 2020 underlying business, which covers all entities that were under our control in 2020 - the first year of our Planet Passionate programme - plus organic growth (excluding acquisitions). This like-for-like approach to reporting is necessary because it allows us to present our performance and progress against our Planet Passionate targets unaffected by inorganic growth. Absolute performance is also available in Appendix 2.

Kingspan is committed to collecting and presenting accurate and reliable information. To this end, the energy 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 our carbon footprint, our total energy use and three additional Key Performance Indicators. The results of this engagement can be found in the external assurance statement (page 61).

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



A MESSAGE FROM OUR CEO



‘Transforming buildings is an important element of addressing the climate crisis as they represent roughly 39% of global greenhouse gas emissions.’

I am delighted to introduce our second Planet Passionate report which covers our progress and achievements for the year 2021, a year the pandemic continued to reverberate across the globe, altering how we interact, live and work. As we plan and implement our recovery efforts, we are presented with a historic opportunity to help tackle the climate crisis whilst building a more resilient, resource-efficient and equitable world.

Transforming buildings is an important element of addressing the climate crisis as they represent approximately 39% of global greenhouse gas emissions. We are uniquely placed to help support the decarbonisation of the building sector via our extensive offering of high-performance, energy saving systems and solutions. In 2021, our insulation products sold globally were estimated to save 193 million tonnes of CO₂e over their lifetime.

We are fully committed to reducing the environmental impacts of our key products whilst maintaining their high performance. Throughout 2021, we collaborated with our suppliers to find short- and medium-term solutions to help realise this goal. An example of our commitment was the investment in H2 Green Steel (‘H2GS’), a company pioneering new production methods for lower impact steel manufacturing using green hydrogen. Use of lower emissions steel could help us reduce the

embodied carbon of our insulated panel products by up to 25%. We are excited with the progress made this year and aim to announce new product offerings in 2022.

In addition to our efforts to help the decarbonisation of the building sector, we worked tirelessly to improve our environmental performance. Despite the organic growth experienced during the year, we reduced our GHG emissions by 4.3% compared to 2020. In June, we voluntarily updated our science-based targets to bring them in line with a 1.5°C future and our Planet Passionate carbon targets. We have also agreed on an internal carbon charge of €70 per tonne of CO₂e that will be implemented throughout our business in 2023.

We continued investing in renewable energy generation projects across our operations and we also commissioned a renewable heat study that helped us better understand our heat use across our business. This will allow us to make targeted investments in line with our group-specific needs and market specificities. We are also making good progress on our circularity agenda; we recycled 843 million PET bottles into our manufacturing processes and reduced our company’s waste to landfill by 13% compared to last year.



KINGSPAN GROUP AT A GLANCE

Our Vision

TO ACCELERATE A NET-ZERO EMISSIONS FUTURE BUILT ENVIRONMENT WITH THE WELLBEING OF PEOPLE AND PLANET AT HEART.

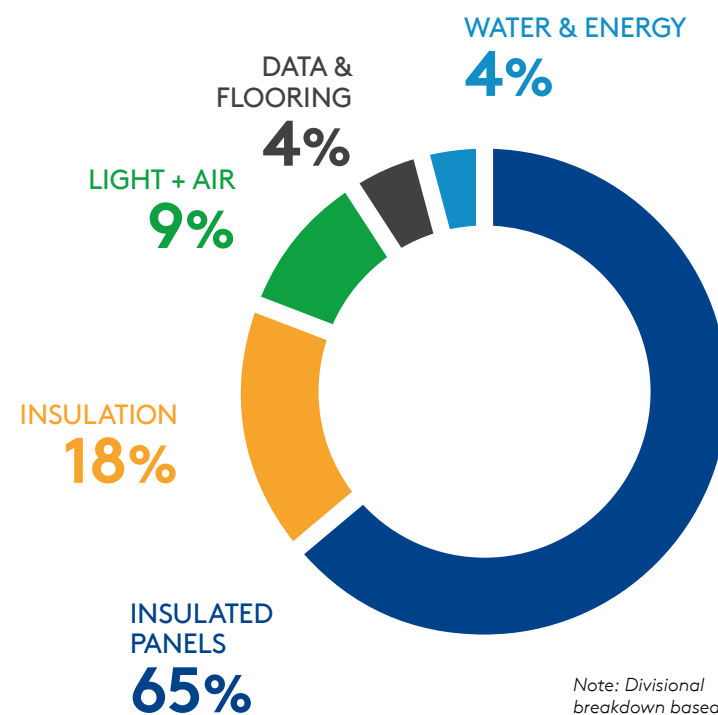
Our Values

Our core values of honesty and integrity, and compliance with the law, are the foundation upon which our strategic pillars sit. For more information on our values, please see our code of conduct [here](#).

Strategic Goals

**INNOVATION****PLANET
PASSIONATE****GLOBAL****COMPLETING THE
ENVELOPE**

Kingspan has five operating divisions:



Our Group in numbers

19,000+ EMPLOYEES**€6.5bn** REVENUE**€755m** TRADING PROFIT**70+** COUNTRIES**198** MANUFACTURING SITES**€41m** INVESTMENT IN INNOVATION

OUR IMPACTS

Kingspan's products sold in 2021, will make a significant positive contribution to the environment over their lifetime.

CARBON

193
million tCO₂e

estimated lifetime carbon
savings from insulated systems
sold in 2021

7.2
million tCO₂e

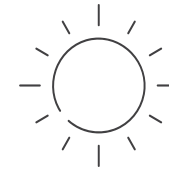
Kingspan 2021 value chain
carbon footprint

The lifetime carbon savings of our insulation systems sold in 2021 are expected to be more than 26 times higher than our 2021 value chain carbon footprint.

Natural Light

9 billion

The capacity to create **9 billion lumens** of natural light annually through our daylighting systems.



1m

Enough to light
up **1 million homes**¹.



Water Conservation

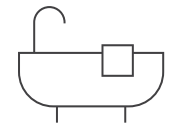
45 billion

Over **45 billion** litres of rainwater will be harvested by the tanks we produced in 2021².



550m

Enough water to fill over
550 million baths.



Recycled Materials

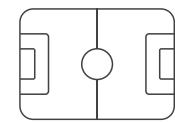
843m

In 2021 alone, we recycled **843 million** waste plastic bottles.



1,150

Enough bottles to fill over
1,150 football pitches.



¹ Assumes 10x60W bulbs per home.
² Assumes 20 year product life.

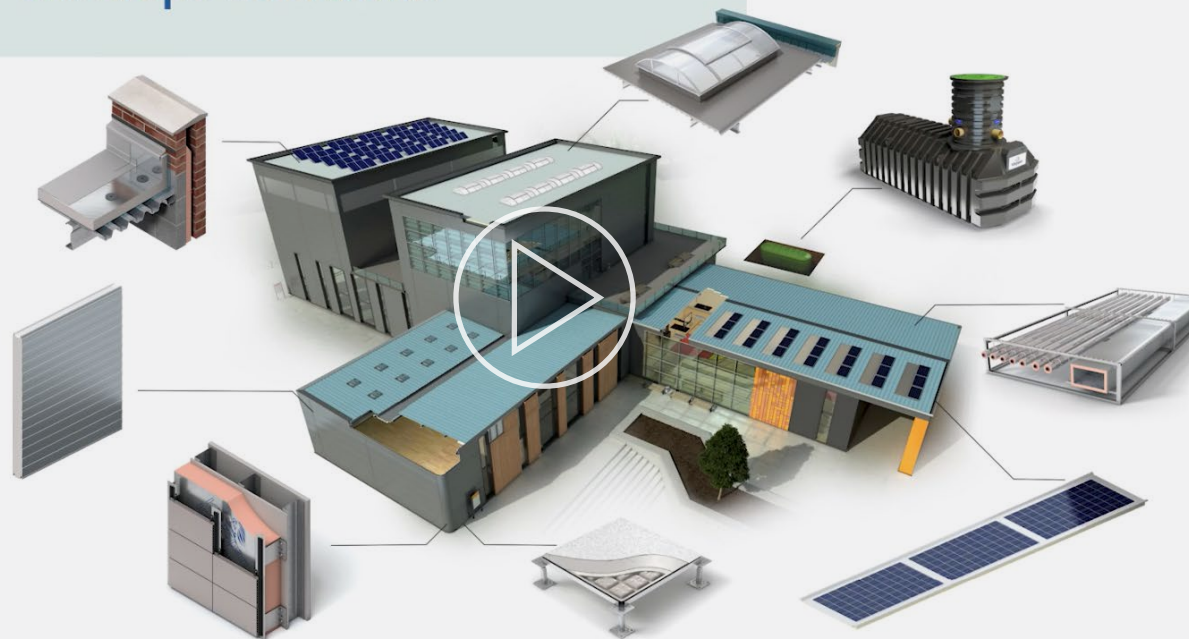
KINGSPAN GROUP - WHO WE ARE

Founded and headquartered in Kingscourt, Co. Cavan, Ireland, Kingspan has expanded into a truly global business operating in over 70 countries and with over 19,000 employees.

Kingspan has five operating divisions: Insulated Panels, Insulation, Water & Energy, Data & Flooring and Light + Air.

Our business model and strategic pillars enable the ongoing conversion to ultra-efficient building envelopes, from outdated, inefficient methods of construction. Through our constant 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 to 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 CO₂ emissions when upstream power generation is included. Action, at scale, is urgently needed.

Kingspan's complete envelope solutions



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.

Sustainability Governance

Our Chief Executive Officer (CEO) of the Board is responsible for sustainability related issues. This responsibility has been embedded at the top of the chain of command.

OUR APPROACH TO SUSTAINABILITY

Kingspan aims to support the Sustainable Development Goals (SDGs) through our relentless development of solutions which enable building owners to consume less resources.



Doing business across the world comes with important responsibilities that extend beyond just 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.

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

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 the future generations.

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. We have broadened our scope 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.

Kingspan aims to support the Sustainable Development Goals (SDGs) through our relentless 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 2021, contributed to the SDGs that are most closely related to our activities and business model.

What are the UN SDGs?

The 17 Sustainable Development Goals (SDGs) - and their respective targets - form the backbone of the 2030 Agenda for Sustainable Development, which was adopted by all United Nations Member States in 2015. The SDGs define global priorities that will put the world on a more sustainable path, free of poverty, environmental degradation and inequalities.

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



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 a multitude

of 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 in a wide range of organisations, associations and initiatives, some notable ones include:

**RE 100****EP 100****TCFD**fundación
ECOALF

Protection of our natural environment: BORN FREE

Born Free 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 (...)



World Green Building Council: Advancing Net Zero

Advancing Net Zero, the global programme by the World Green Building Council (WorldGBC) that was launched in 2016, 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 the official sponsor of this ambitious campaign. Improving energy efficiency and performance in buildings is an essential component of the Advancing Net Zero programme, which aims for every single building – both new and existing – to operate at zero carbon emissions by 2050, or sooner.

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 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.



PLANET PASSIONATE

Our ambitious 10-year global sustainability programme aims to have a positive impact on three big global challenges: climate change, circularity and 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. The overarching goals of our Planet Passionate programme are:

THE OVERARCHING GOALS

1. Business:

Significantly reducing our environmental footprint as we continue to grow our business.

2. Products:

Further enhance the environmental performance of our products.

3. Business leadership:

Contribution towards the achievement of the UN Sustainable Development Goals (SDGs).

4

Thematic areas

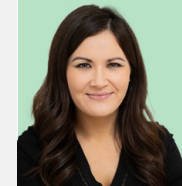
12

Targets

10

Years

Bianca Wong
Global Head of
Sustainability



"Planet Passionate is a strategic pillar of our business strategy. It will enable us to accelerate the decarbonisation of our supply chain and operations by 2030, while bringing new innovative solutions to market at the pace required to stay within a chance of limiting global temperature rise to 1.5°C."

Mike Stenson
Group Head of
Innovation



"The world is undergoing fundamental change to ensure the survival of the planet. Solutions that are not dreamt of yet must become mainstream in 10 years. Our innovation agenda focuses on the decarbonisation of our materials and the creation of more circular solutions, and Planet Passionate provides a clear framework for us to focus on."

Louise Foody
Director of Digital



"The new Digital Age offers unprecedented opportunities for our digital and natural worlds. Through new digital technologies we are exploring, inspiring and enabling how buildings are built and operated. Setting out to transform our industry, we are relentless in our focus to create a new, exciting, sustainable future."

PLANET PASSIONATE - OUR APPROACH

We recognise that our Planet Passionate targets are ambitious and will be challenging to achieve. During 2021 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 the strong internal procedures and processes that were developed through our Net Zero Energy programme in the past decade. Our Planet Passionate team consists of 14 divisional representatives from all business units and geographies. Each division 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 roll-out.

Green Finance

In 2020, we arranged a bilateral 'Green Loan' of €50m to help fund our Planet Passionate initiatives. In June 2021, we completed a new, 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 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

We are developing a global employee Planet Passionate Champions network to allow all employees to get involved and contribute towards achieving the targets in their business unit. Sustainability is a topic that is important to our employees, and we want to enable them to become Planet Passionate both at work and at home. The internal response has been very positive, and we fully expect our people to help us fulfil our vision. In addition, we are developing an extensive programme toolkit to facilitate learning and raise awareness. In 2021, our employees conducted over 20 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.



PROGRESS AGAINST OUR TARGETS

	Metric	2020	2021**	Change	Target	Target Year	Progress towards target	INTENSITY METRICS - YoY
CARBON	GHG emissions - scope 1 & 2 ¹ (tCO ₂ e)	312,640*	299,077	-4.3%	Net-Zero Carbon	2030	4.3%	<div>Carbon intensity tCO₂e/€m</div> <div>  <div>29%</div> <div>Reduction</div> </div>
	Decrease in product CO ₂ e intensity from primary supply partners (%)	0	0	-	50%	2030		
	Zero emission company funded cars - Annual replacement (%)	11	29	18	100%	2025	29%	
ENERGY	Direct renewable energy (%)	19.5*	26.1	6.6	60%	2030	26.1%	<div>Energy intensity (MWh/€m)</div> <div>  <div>15%</div> <div>Reduction</div> </div>
	On-site renewable energy generation (%)	4.9*	4.8	-0.1	20%	2030	4.8%	
	Wholly owned facilities with rooftop solar PV (%)	21.7	28.4	6.7	100%	2030	28%	
	Net-Zero Energy (%)	100	100	-	100%	2030	100%	
CIRCULARITY	Company waste to landfill (t)	18,642*	16,294	-13%	0	2030	13%	<div>Landfill waste intensity (t/€m)</div> <div>  <div>35%</div> <div>Reduction</div> </div>
	PET bottles recycled into our processes (million bottles)	573	843	+47%	1 billion	2025	84.3%	
	QuadCore™ products utilising recycled PET (no. of sites)	1	1	-	19 sites	2025	5%	
WATER	Rainwater harvested (million litres)	20.1*	20.6	+2.6%	100 ML	2030	20.6%	<div>Water intensity (million lt/€m)</div> <div>  <div>14%</div> <div>Reduction</div> </div>
	Ocean clean-up projects supported (No.)	1	2	100%	5 projects	2025	40%	

¹ excluding biogenic emissions

*Restated figures due to improved data collection methodologies

**Scope and boundaries: 2020 underlying business (manufacturing and assembly sites that were under our control in 2020 plus organic growth)

Note: the intensity indicators were calculated based on absolute figures (2021 business) and 2021 revenue was used as the denominator to calculate the ratio.



CARBON

WE MUST STRIVE TO **LIMIT** GLOBAL
TEMPERATURE RISE TO **1.5°C**.

RACE TO ZERO

BUSINESS
AMBITION FOR

1.5°C



Science-based targets **Aligned with a 1.5°C trajectory:**

1. 90% absolute reduction in scope 1 & 2 GHG emissions by 2030 from a 2020 base year
2. 42% absolute reduction in scope 3 GHG emissions from purchased goods and services, use of sold products and end-of-life treatment of sold products by 2030 from a 2020 base year

Target

ZERO

Net-zero carbon
manufacturing by 2030

Target

50%

Reduction in product CO₂e intensity
from our primary supply partners by
2030

Target

100%

Zero emission company
funded cars by 2025

INTRODUCTION

According to the World Economic Forum¹, even though global greenhouse gas (GHG) emissions decreased in the first half of 2020 due to lockdowns, “climate action failure” remains a catastrophic risk. The consensus from the scientific community is clear and urgent: we must strive to limit global temperature rise to 1.5°C above pre-industrial levels. In practice, this means that global, anthropogenic CO₂ emissions need to reach net-zero no later than 2050 to limit warming to 1.5°C. Achieving absolute emissions reductions must be the pillar of all mitigation efforts globally.

As governments and companies around the world embark on their journey to recovery from the severe impacts caused by the COVID-19 pandemic, we must work together to overcome the challenges faced in a post-pandemic world to achieve a sustainable and inclusive net-zero world.

Our mission at Kingspan is to accelerate a net-zero emissions future built environment,, with the wellbeing of people and planet at its heart. Living this mission means demonstrating business leadership in safeguarding and sustaining the environment.

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 manufacturing and delivery of a wide-range of high-performance, energy and resource efficient solutions.

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.

¹ The Global Risks Report 2021, 16th Edition, World Economic Forum

OUR VISION

Carbon management is not only a part of our approach to contribute to sustainable development. Our business model focuses on providing high-performance products that help our customers reduce the environmental impacts of their buildings, and ultimately allow us to achieve our vision: to contribute to a net-zero carbon built environment.

Mitigation

1. Minimise our environmental impacts across our value chain



Lower embodied carbon raw materials



Net-zero carbon operations

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 emissions.

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

Products

2. Offer lower embodied carbon, high performance solutions



Reduce embodied carbon of existing solutions while also bringing new innovative solutions to market at pace

Investing in R&D is a fundamental aspect of our business model (€40.9m in 2021) because it allows us to continue driving Kingspan's position as market leader in energy and resource efficient solutions.

We are actively working on a wide-range of projects that will deliver even more value to our customers' emissions.

VISION

Contribute to a net-zero carbon built environment

The construction and operation of buildings account for approximately 36% of global energy use and 39% of energy-related CO₂ emissions. Our vision is to contribute to a more sustainable, energy-efficient construction sector by bringing to market innovative, lower embodied carbon solutions.

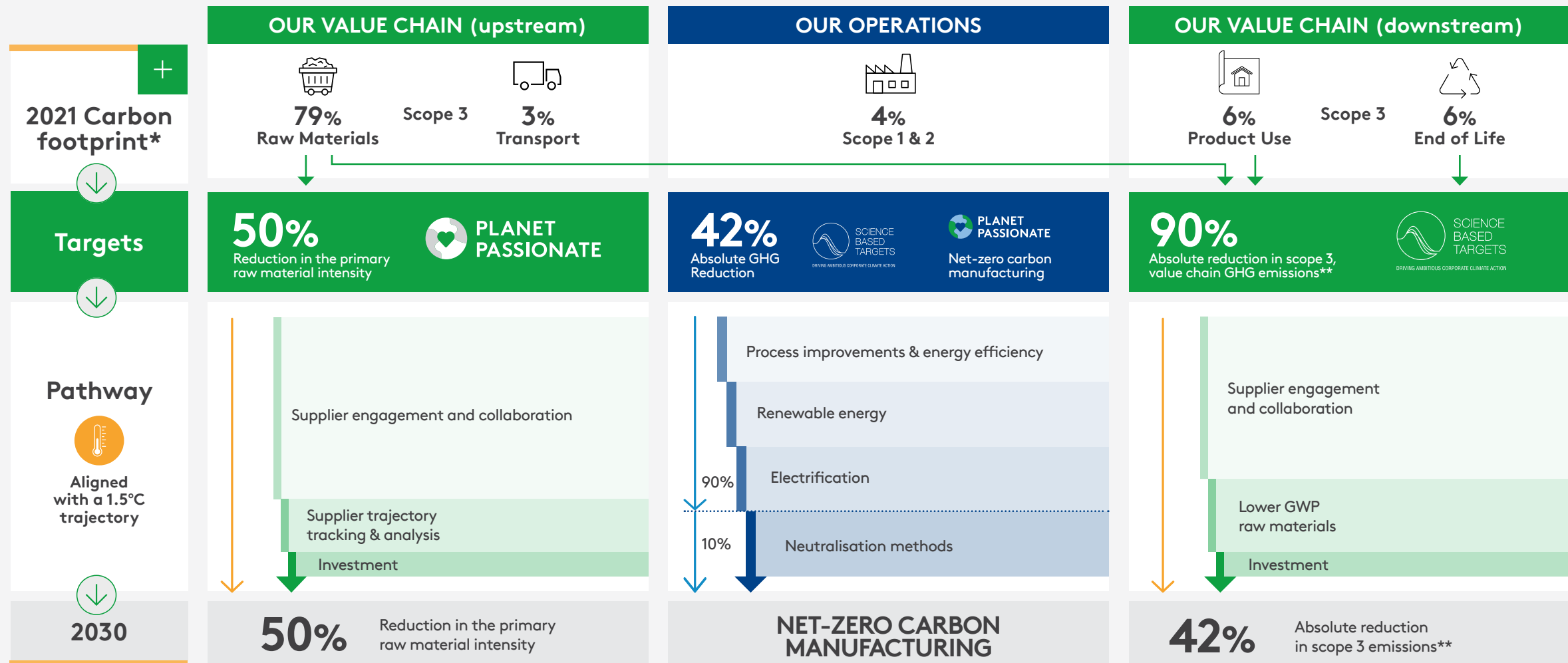
2021 Impact

193
Million tCO₂e

Estimated lifetime carbon savings of insulated systems sold in 2021.



OUR 2030 CARBON PATHWAY



*This graph presents only our most material scope 3 categories. Our total scope 3 emissions are disclosed in Appendix 2.
 ** includes: purchased goods and services, use of sold products and end-of-life treatment of sold products.

PROGRESS AGAINST TARGETS AND KEY METRICS

Carbon in manufacturing*

2021 (tCO₂e):
299,077



2020 (tCO₂e):
312,640

The 4.3% decrease was made possible via a targeted increase in renewable energy use and reduction in the use of higher Global warming potential (GWP) materials.

Reduction in key raw material carbon intensity

2021:
0%



2020:
0%

Even though we did not make any measurable progress in 2021, we continued to actively work with our key suppliers through our supplier engagement programme, developing a long term strategy to ensure achievement of our ambitious target.

Zero emission company funded cars

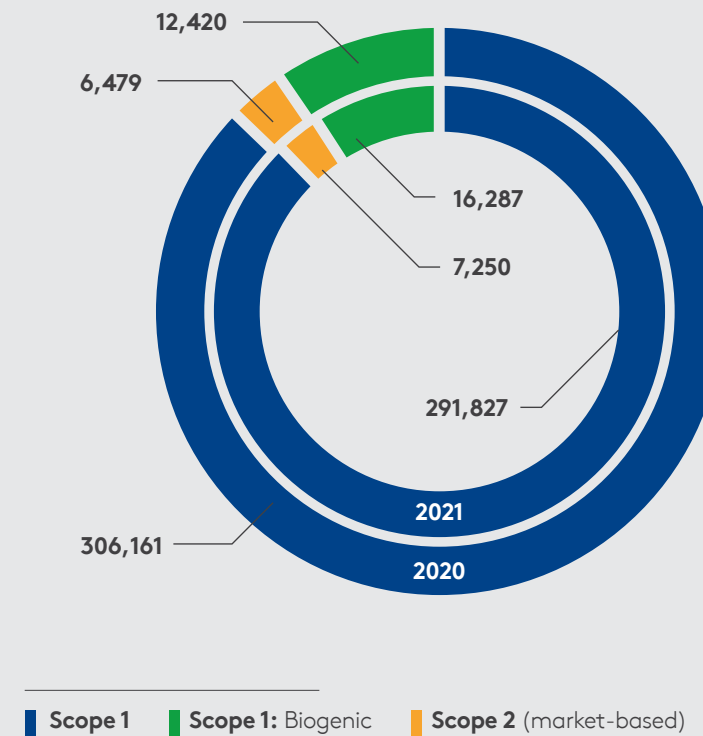
2021:
29%



2020:
11%

29% annual conversion to zero emissions cars in 2021 was achieved by further deployment across our sites in Europe specifically in the Netherlands, Belgium and France.

CARBON FOOTPRINT (tCO₂e)



Carbon intensity (tCO₂e/€m of revenue)

2021
48.8



2020
68.3

Note: the intensity indicators were calculated based on absolute figures (2021 business)

* Does not include biogenic emissions. Also, boundary includes only manufacturing and assembly sites, since the GHG emissions from the rest of our facilities are not considered material.

ELECTRIFICATION AND NET-ZERO CARBON MANUFACTURING

At Kingspan we are working hard to accelerate our progress towards achieving our net-zero carbon manufacturing target. The below case studies highlight some of our progress to date at both new and existing facilities.



Process Electrification & Rooftop Solar PV
Insulation Division: Jönköping, Sweden



Ground Source Heat Pump & Rooftop Solar PV
Insulated Panels, CEER Division: Parainen, Finland



Biomass & Rooftop Solar PV
Data & Flooring Division: Hull, UK



Process Electrification & Renewable Electricity
Light + Air Division: Kingscourt, Ireland



Conversion to BioLPG
Water & Energy Division: Glenamaddy, Ireland

OUR APPROACH TO MANAGING CARBON AND ITS IMPACTS

To manage our carbon impacts and to ultimately achieve our vision, we have established a robust carbon strategy, which is split into four, interconnected focus areas:

RAW MATERIALS

Focusing on reducing the embodied carbon of our key raw materials

OPERATIONS

Focusing on decarbonising our operations

PRODUCTS

Focusing on offering lower embodied carbon solutions

INDUSTRY

Focusing on highlighting and addressing the carbon impacts of our industry

We recognise that we can't manage our impacts without looking outwards, so each of these areas are integral to our strategy. Please see the rest of this section for more details.

RESPONSIBILITIES

The responsibility for climate related issues fall to Kingspan's CEO. Climate related issues are not considered on a stand-alone basis; they are fully integrated into the Group's business model and strategy. For more information on our Climate Governance, please see Appendix 5: Climate-related Disclosures.

RISK MANAGEMENT

Climate change risks and opportunities are managed through a multi-disciplinary, company-wide, risk management process. Through this process we also analyse and assess the potential financial impacts of climate change on our financial planning and bottom line. For more information on our risk management process and our key risks and opportunities, please see Appendix 5: Climate-related Disclosures

CHALLENGES

As we progress on our journey towards our net-zero carbon manufacturing target, we have identified some key challenges that will affect our ability to meet this target including:

Raw Materials:

- **Challenge:** viable raw material options that can meet the technical performance criteria required to maintain (or enhance) current product performance, that do not have a higher embodied carbon impact than the existing product.

- **Strategy:** continuous supplier engagement, collaboration and testing of potential new raw material options to ensure they will meet all necessary criteria before we implement a product development programme.

Renewable Energy

- **Challenge:** the availability (and cost) of renewable electricity and fuel options in some regions.
- **Strategy:** 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.

INTERNAL CARBON CHARGE

Throughout 2021, our sustainability and finance teams worked collaboratively to develop an internal carbon price mechanism specific to our needs that will support in futureproofing our business and accelerate the reduction of our GHG emissions.

Starting in January 2023, we will introduce an internal carbon charge across our global business. The starting price will be 70€/tCO₂e and will be adjusted as required to ensure progress against our targets and any relevant developments in this field. The implementation of an internal carbon charge is the right - and necessary - next step to put a central focus on carbon across our business.



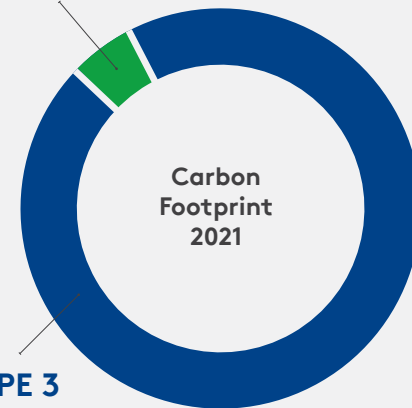
RAW MATERIALS

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 have worked hard over the years to reduce our scope 1 & 2 GHG emissions across our business (please see next section for more details); however, we know that to enable real change we must proactively reduce GHG emissions across our value chain.



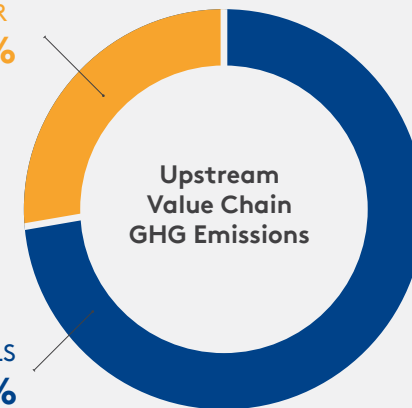
We must find solutions to help address our upstream emissions, in particular, emissions from our purchased goods and services, which account for over 90% of our total value chain emissions. The most significant portion of our upstream value chain emissions are attributable to one key raw material category – metals. Reducing the emissions from metals 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.

SCOPE 1 & 2
(MARKET-BASED)
4%



SCOPE 3
96%

OTHER
27%



METALS
73%

Our approach

We manage the embodied carbon of the raw materials we purchase by focusing our efforts around the three following workstreams:

- Supplier Engagement:**

We are actively engaging 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. In 2021, we had over 50 internal and external cross-functional meetings related to our supply chain carbon impact.
- Data Tracking:**

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

We seek to identify areas of opportunity to collaborate and share knowledge, resources and expertise on emission reduction projects with our key suppliers.

H2 Green Steel INTERVIEW

Interview with
LARS LUNDSTROM
Chief Sustainability Officer
H2 Green Steel



OPERATIONS

Moving down our value chain, the next area of focus is our own operations (scope 1 & 2 GHG emissions). During the previous decade (2010 – 2020), we made good progress on mitigating our emissions from our own operations through a comprehensive set of initiatives and projects under the Net-Zero Energy programme. Through Planet Passionate we set a target to achieve Net-Zero Carbon (NZC) manufacturing across our global business by 2030.

Net-Zero Carbon Manufacturing

We aim to achieve NZC (CO₂e) via a combination of measures, including:

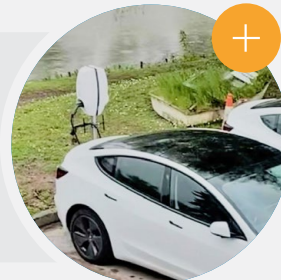
- **Process emissions reductions:** Continued focus on reducing GHG emissions generated from our processes. We have ongoing mitigation plans in place and aim to continually reduce, or where possible eliminate, these emissions entirely.
- **Energy-related emissions:** We will continue to improve our energy productivity and reduce energy use while also rapidly increasing our direct use of renewable energy in line with our Planet Passionate energy targets.

Our scope 1 & 2 emissions are closely linked to our energy use and generation. Please see the “Energy” chapter for detailed information on our energy efficiency and generation performance and projects.

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.

A zero emissions car is a car with zero emissions at the tailpipe/in use, in line with Regulation (EU) 2019/631.



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. In 2021, we converted 29% of our annual replacement cars to zero emission cars. We installed an additional 33 new EV charging stations across our business, with a further 45 to be commissioned in early 2022.

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 EV charging infrastructure at home.

33

New EV charging stations in 2021

“Several projects were completed in 2021 to reduce emissions in the CEER division. This includes on-site energy generation (PV and Heat Pump), a switch from fossil fuels to electricity (replacement of diesel/ LPG forklifts with electric), and more energy efficiency projects (LED lights, compressor stations upgrade). The completed projects will result in a 670 tCO₂e reduction per annum.”

Artur Kryzwulski
Planet Passionate Leader
Insulated Panels, CEER



PRODUCTS

Product embodied carbon

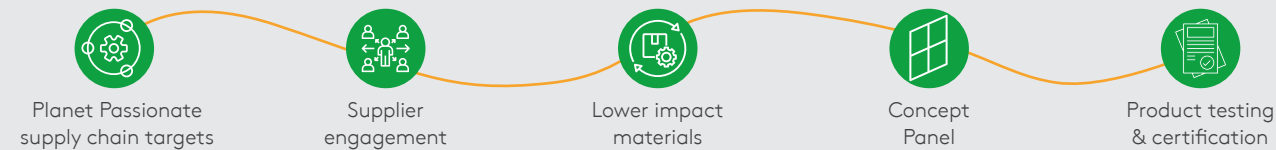
Addressing product level embodied carbon is a top priority. Our goal is to help enable low carbon buildings of the future. Together, our Planet Passionate and innovation agendas are aligned to help deliver reduced embodied carbon products as soon as possible.

Through our actions to reduce carbon across our value we aim to deliver high performance, low carbon products that help to minimise the whole life carbon impacts of buildings. Embodied carbon impact data is presented at product level through our third party verified EN 15804 Environmental Product Declarations (EPDs). The information helps to 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 (WGBC) advancing net-zero roadmap for manufacturers.



Click here for more information +

CASE STUDY: Low Carbon Panel Development



Throughout 2021, our sustainability and procurement teams worked collaboratively to find lower embodied carbon raw material sources that will enable us to reduce the environmental impact of our key products whilst still maintaining technical performance.

Through our ambitious supply chain targets, we aim to reduce the carbon intensity of our key raw materials by 50% by 2030. To do this, we engage proactively with our suppliers to further develop our supply carbon reduction roadmap and identify options to source lower impact materials today and potential increased availability in the medium term.

Through our work to date, we identified a number of potential options to source lower embodied carbon steel and chemicals. These options have the potential to reduce the embodied carbon impact of an insulated panel by up to **25%** and increase the recycled and renewable content by up to **45%**.

At IKON, our Global Innovation Centre, we have manufactured a number of concept panels using these alternative materials for product testing. We are currently finalising the development of a lower embodied carbon insulated panel and expect to have a market offering available for our customers in Q2 2022.



Planet+

Planet +

The Planet + product offering will showcase Kingspan's commitment to delivering high performance, lower environmental impact solutions to the market at pace. Launching in Q3 2022, the range will cover both new and existing products from across the Kingspan range that have achieved a significant reduction in environmental impacts.

INDUSTRY

We are proud to support and contribute to the development of several industry initiatives and tools to raise awareness of the embodied impact of building materials.

World Green Building Council - Advancing Net Zero

Advancing Net Zero was launched in 2016 and works with national Green Building Councils to develop tools and resources to build industry capacity to deliver net-zero carbon buildings.

In early 2020, we announced our support of the World Green Building Council's (WorldGBC) ambitious campaign to accelerate the transition to a net-zero built environment by 2050, as official sponsors of the Advancing Net Zero project.

Improving energy efficiency and performance in buildings is an essential component of the Advancing Net Zero project, which aims for every single building – both new and existing – to operate at zero carbon emissions by 2050, or sooner. We are committed to promoting an envelope first approach and supporting the industry's development of innovative solutions towards decarbonisation and appreciate that this requires systemic change in the way products are manufactured, used and transported around the world.

As well as sponsoring the Advancing Net Zero Project, we were also a signatory to 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.

Business Ambition for 1.5°C

In 2020, Kingspan committed to raise its ambition in line with limiting global temperature rise to 1.5°C through signatory of the 'Business Ambition for 1.5°C Pledge' letter. By signing up we have also become part of the 'Race to Zero' Campaign.

materials CAN

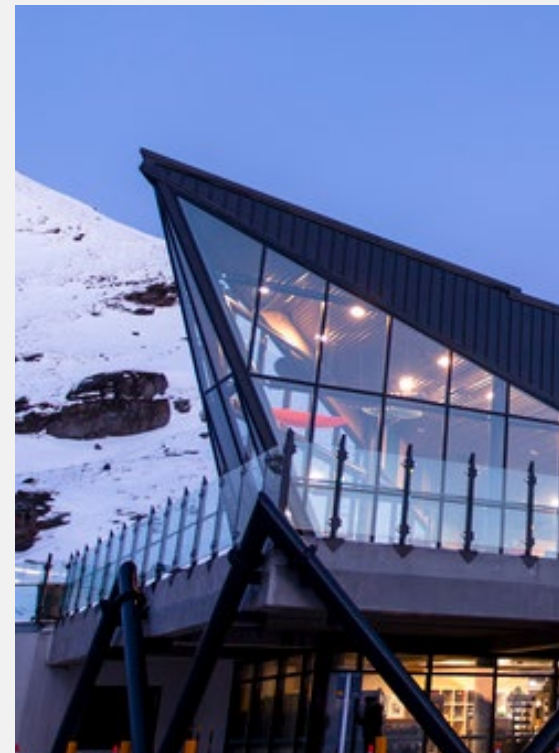
Kingspan joined materials CAN in 2019. It is comprised of members of the global building industry that are ready to act on the smart prioritisation of embodied carbon in building materials.

EC3

Kingspan has partnered with 50 other building industry leaders through The Carbon Leadership Forum, measuring and reducing the carbon footprint of building materials. The result is the Embodied Carbon in Construction Calculator ("EC3"), an open-source tool for architects, engineers, owners, construction companies, building material suppliers and policy makers to compare and reduce embodied carbon emissions from construction materials.

mindful MATERIALS

mindful MATERIALS (mM) was created to provide a practical means of incorporating transparency and optimisation information into designers' everyday work process. The mindful MATERIALS Library aggregates product sustainability information while minimising redundant effort on the part of both manufacturers and designers. Kingspan began to support mM in late 2015 and continues to help the organisation by participating in the Steering Group and multiple working groups.



“Industry must proactively work to address both operational and embodied carbon within the built environment, at pace. We have little time to act and much to do, we are proud to support initiatives that will help to accelerate this journey.”

Brent Trenga
Director of Sustainability
Insulated Panels, North America





ENERGY

USE IS INEXTRICABLY LINKED WITH
PROGRESS, **HUMAN WELLBEING**
AND **SUSTAINABLE DEVELOPMENT**.

INTRODUCTION

A climate resilient, decarbonised energy system is a prerequisite for ultimately creating sustainable economic growth and development. Progress towards all Sustainable Development Goals (SDGs) is heavily dependent on urgent and decisive action; energy sits at the epicentre of the Agenda for Sustainable Development.

Energy is also closely linked with climate change, as 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.

The Covid-19 pandemic highlighted the vulnerability of energy systems across the world and showcased that economies should stop relying on fuels that are prone to severe price fluctuations. Navigating our way out of the crisis, we are presented with a unique opportunity to enact strong and ambitious policies and invest in a clean, sustainable, and fair future.

At Kingspan, we continue our efforts to increase our use of direct renewable energy and improve our energy efficiency. We aim to decouple our growth from fossil fuel to improve our energy security and resilience against price fluctuations. At the same time, we will continue to develop and offer innovative, energy-efficient and renewable energy generating solutions to the market, contributing to more stable, efficient and sustainable energy systems.

Target

60%

Direct renewable energy
use by 2030

Target

20%

On-site renewable energy
generated by 2030

Target

100%

Install Solar PV systems on all
wholly owned facilities by 2030

Target

100%

Maintain our net-zero
energy status

2030 RENEWABLE ENERGY PATHWAY

35%

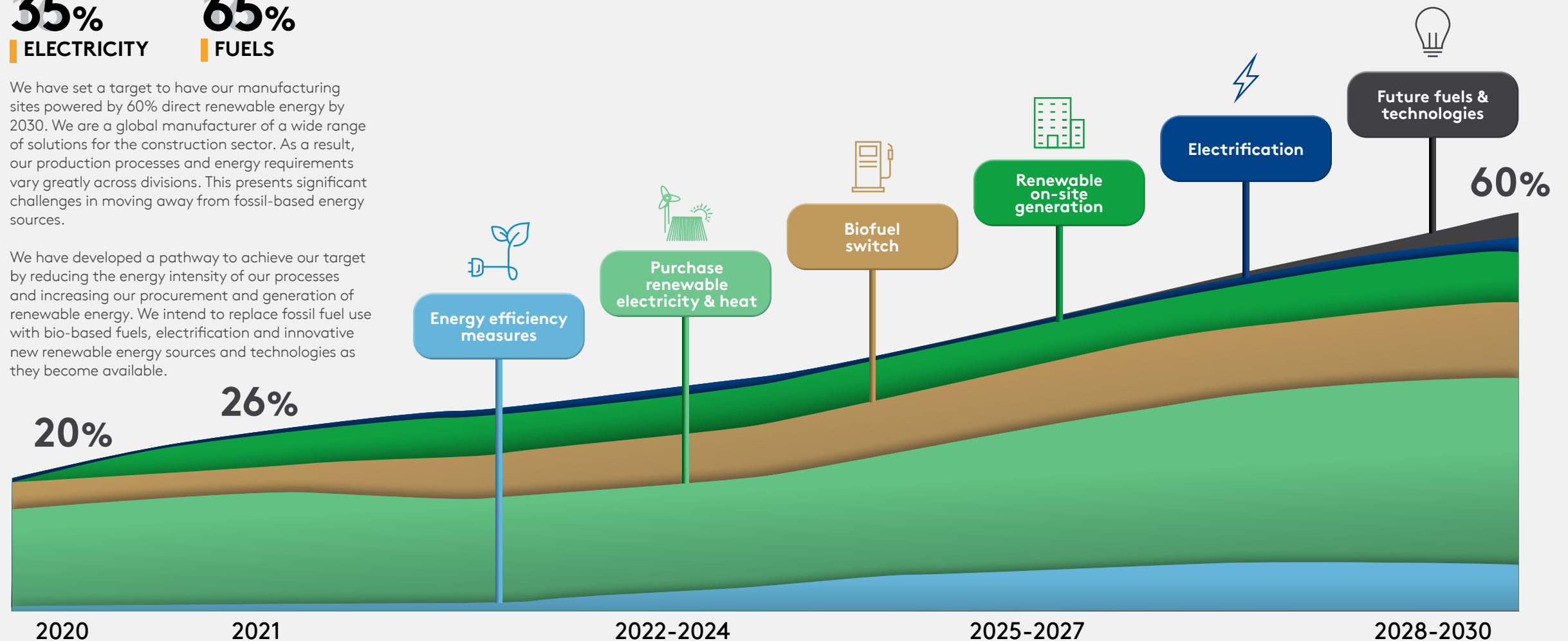
ELECTRICITY

65%

FUELS

We have set a target to have our manufacturing sites powered by 60% direct renewable energy by 2030. We are a global manufacturer of a wide range of solutions for the construction sector. As a result, our production processes and energy requirements vary greatly across divisions. This presents significant challenges in moving away from fossil-based energy sources.

We have developed a pathway to achieve our target by reducing the energy intensity of our processes and increasing our procurement and generation of renewable energy. We intend to replace fossil fuel use with bio-based fuels, electrification and innovative new renewable energy sources and technologies as they become available.



PROGRESS AGAINST TARGETS AND KEY METRICS

Direct renewable energy use

2021:
26.1%



2020:
19.5%

26% direct renewable energy use was achieved through further conversion to renewable electricity and switching fossil fuels to renewable alternatives including bioLPG.

Onsite renewable energy generation

2021:
4.8%



2020:
4.9%

In 2021, energy use increased by over 90 GWh. Onsite generation increased by approximately 4 GWh through the installation of Solar PV and Heat pump systems.

Wholly owned facilities with rooftop solar PV

2021:
28.4%



2020:
21.7%

7 new rooftop PV systems were installed on Kingspan's wholly owned sites in 2021 with a capability to generate over 9 GWh.

Net Zero Energy

100%

Energy Intensity* (MWh/€ million of revenue)

2021
190

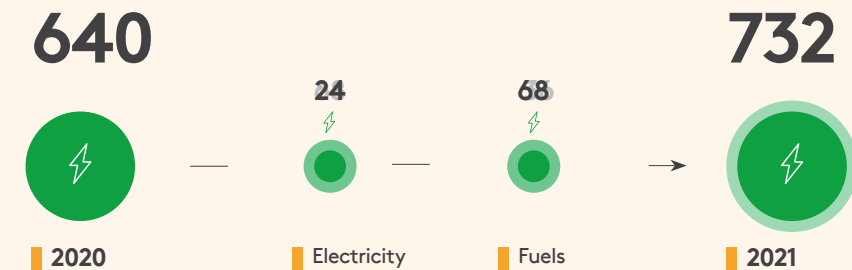
2020
140



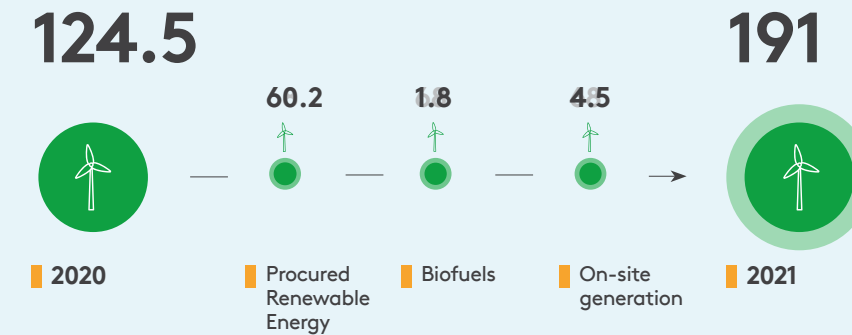
15

Note: the intensity indicators were calculated based on absolute figures (2021 business)

Total energy use (GWh)

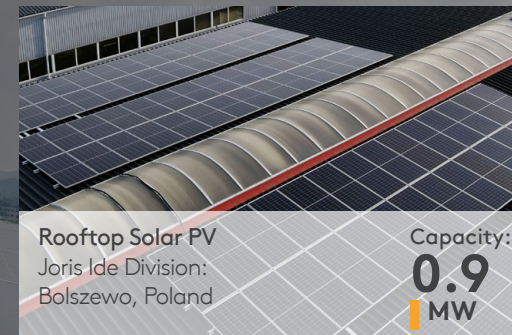


Direct renewable energy use (GWh)



PROJECT HIGHLIGHTS

At Kingspan we are working hard to accelerate our use of on-site generation of renewable energy. The below case studies highlight some of our progress to date at both new and existing facilities.



OUR APPROACH TO MANAGING ENERGY AND ITS IMPACTS

Our energy strategy is split into three, interconnected focus areas:

OPERATIONS

Focusing on decarbonising our energy use

PRODUCTS

Focusing on providing advanced energy efficient and renewable energy solutions

INDUSTRY

Focusing on advocating for improved energy efficiency of new and existing buildings to help tackle the climate crisis

We recognise that we can't manage our impacts without looking outwards, so each of these areas is integral to our strategy. Please see the rest of this section for more details.

We have robust systems in place to track and monitor our performance against our energy-related targets. All manufacturing facilities report on a monthly-basis and our energy consumption is audited both internally and externally to enhance reliability.

HEAT STUDY



After achieving Net Zero Energy (NZE) in 2020, we realized that if we are to meet our energy and carbon Planet Passionate targets by 2030, we needed a deeper insight into the energy policy landscape, the current and future state of the market and a more detailed analysis of our manufacturing sites' heat processes. To this end, in 2021, we commissioned a renewable heat study.

The heat study examined our current heat use across our global business and modelled potential options for decarbonising multiple processes, an assessment of the financial investments required and the impact on fuel costs to 2030.

We will utilise the results of the study to make targeted, sensible investments in line with our Group specific needs and market specificities.

"Energy efficiency is embedded in our culture and is a key part of our strategy over the last 10 years – we call this 'save more' and have had much success in improving the energy efficiency of our buildings and processes via a range of interventions that have included LED lighting, building management systems, control of compressed air and energy efficient motors and drives. All of this has been supported by data collection and ongoing implementation of ISO 50001 across our key manufacturing sites."

Mark Harris
Planet Passionate Chairperson



OPERATIONS

Net-Zero Energy

We achieved our Net-Zero Energy (NZE) goal in 2020 and have ensured that we have maintained our NZE status in 2021. Achieving NZE is made possible via a three-step approach:

1. SAVE MORE

Energy efficiency first:

We believe the priority should always be to optimise energy consumption, and so we have put particular focus on the implementation of energy efficiency projects.

2. GENERATE MORE

On-site renewable energy generation: (more information on the next page)

3. BUY MORE

Procurement of renewable energy & certification:

Where possible, we have purchased certified renewable energy directly from our suppliers. In locations where that was not possible for technical and/or financial reasons, we have purchased unbundled renewable energy certificates.

NZE Definition

Achieving net-zero energy means matching 100% of our operational energy using renewable energy and the purchase of renewable energy certificates to offset any remaining non-renewable energy use.

“In 2021, we implemented BioLPG contracts at our sites in Aston Clinton and Portadown in the UK and in Glenamaddy in Ireland. The introduction of this renewable energy source brings us one step closer to achieving our goal of having all manufacturing sites being powered by 100% renewable energy.”

Aidan Roberts
Planet Passionate Leader
Water & Energy



Renewable Energy Use

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 materials and products for the construction sector, our production processes and energy requirements vary greatly across divisions.

In 2021, our energy demand was approximately 65% fuels and 35% electricity. This means that in order 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 very challenging. Nevertheless, we must explore and seek out initiatives that will help us to achieve our targets.

Progress in this area in 2021 includes:

Energy efficiency

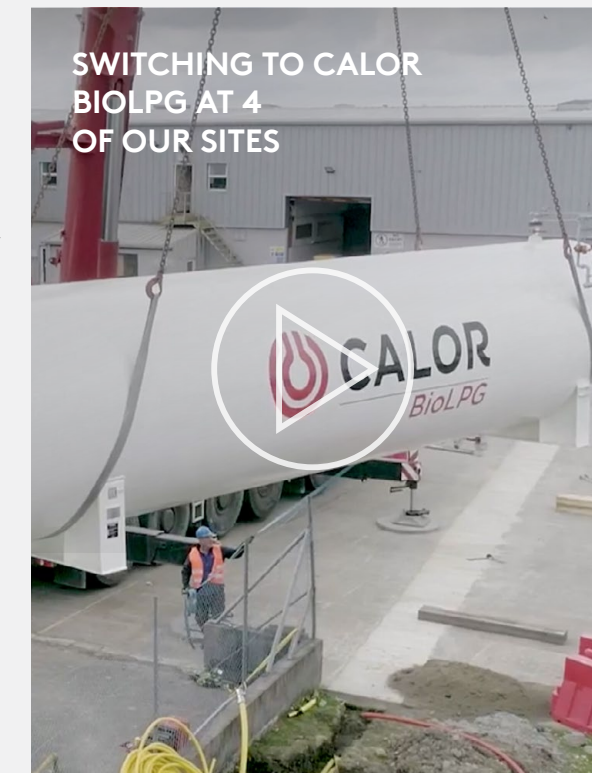
Energy efficiency is a well-established discipline embedded in our group. In 2021, we deployed several projects, including LED lighting and equipment upgrades. One notable project helped us reduce product energy intensity by over 30%.

Renewable electricity

We focus on both the procurement and generation of renewable electricity at our sites. We have continued to focus on the purchase of renewable electricity directly from our utility providers where available. In 2021, we signed 36 additional renewable electricity contracts.

Renewable fuels

We are actively investigating options to purchase certified renewable fuels directly from our utility providers. In 2021, we signed contracts for the purchase of 6 GWh of BioLPG per annum at our sites in Aston Clinton and Portadown in the UK and Glenmaddy, Ireland.



On-site 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 greenhouse gas emissions and long-term operational costs.

We are deploying options to generate both renewable electricity and heat. As we have multiple manufacturing processes, we must assess each site individually and investigate the feasibility of potential on-site generation options based on location, cost and viable technologies.

In 2021, we further developed our roadmap for both on-site generation of renewable electricity and renewable heat. Renewable heat options continue to be challenging as renewable heat technologies are not as developed as the ones for renewable electricity.

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 navigate the nuances of the global energy markets and make informed decisions that will help us reach our targets (for more information see page 25).

Our energy generation sources



BIOFUELS



BIOMASS



HEAT PUMPS



SOLAR



WIND



In 2021, we made significant progress on several on-site generation projects, advancing from the feasibility phase to the detailed design and approval phase. We deployed 14 projects globally across our sites in Europe and North America, which will generate approximately 14 GWh per annum. We have 16 additional projects approved and waiting installation which will generate approximately 8.8 GWh of renewable energy annually when complete.



“In 2021, we deployed 6 rooftop solar PV systems in 2 countries in the Joris Ide division. These systems will generate 2.6 GWh of renewable electricity annually.”

Laurence Stalmans
Planet Passionate Leader
Joris Ide



PRODUCTS

At Kingspan, we take a holistic approach to energy management, encompassing our manufacturing operations, product development and our engagement with external stakeholders.

Product Innovation: Kingspan PowerPanel

Kingspan PowerPanel is the next generation BIPV (Building Integrated Photovoltaic) solution for pitched roof applications, combining industry leading QuadCore™ insulated panels with high-efficiency monocrystalline photovoltaic technology in a single, factory-manufactured component.

The system does not require additional fixings, rail supports and PV modules offering a weight saving of up to 74% compared to roof and mounted PV modules.

Launching in 2022, Kingspan PowerPanel will offer:

- Industry-leading thermal performance through our QuadCore™ advanced insulation technology providing operational energy savings of up to 30%.
- Generate renewable energy on-site and help mitigate future energy price increases.
- Contributes to BREEAM points system (and other green building incentives) helping achieve an A+ rating.
- Lightweight roof and PV solution, suitable for many existing roof structures without the need for additional structural works or aesthetic compromises.

INDUSTRY

We believe that in order to drive real change in our industry we must work collectively to address the systemic issues that we face. We actively participate in industry conferences, panel discussions and workshops to learn and share our progress towards our goals to date. We are proud to be part of the following industry initiatives and organisations:

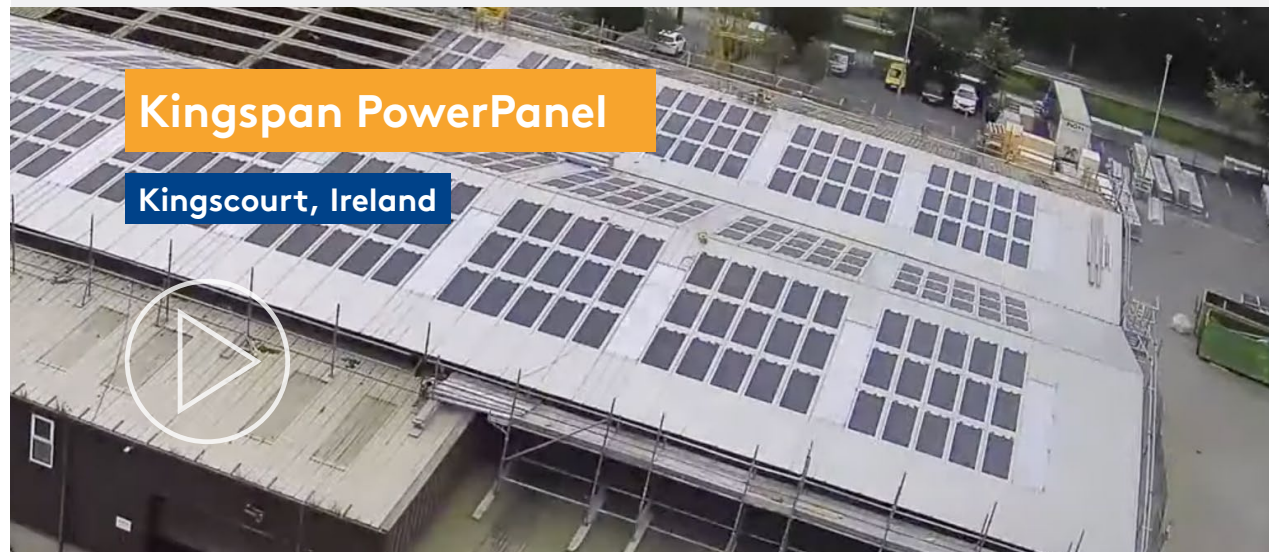
RE 100

EP 100



“Improving energy efficiency of new and existing buildings is crucial to help tackle the climate crisis. We are proud to be a part of industry organisations helping to make this a reality.”

Jonna Byskata
Head of EU Public Affairs
Kingspan Group





CIRCULARITY

AN INNOVATIVE SOLUTION TO THE TRADITIONAL
TAKE-MAKE-DISPOSE APPROACH.

Target

0

Zero Company Waste to
landfill by 2030

Target

100%

QuadCore™ products utilising
recycled PET by 2025

Target

1billion

1 billion PET bottles recycled into our
manufacturing processes by 2025

INTRODUCTION

The construction industry is the largest consumer of raw materials, with building and infrastructure accounting for 38.8 billion tonnes annually¹, yet less than a third of Construction and Demolition (C&D) waste is currently recovered²; a third¹ of the world's landfill waste is C&D waste. 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 and innovative 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.

In addition to the challenges posed by a linear economy, the supply chain disruptions caused by the global pandemic highlighted the vulnerabilities of global supply chains to shocks. These 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. Furthermore, extracting and using raw materials have major impacts on energy consumption, GHG emissions and biodiversity loss. Hence, it is essential that we keep valuable resources in use for as long as possible and maximise the embedded value of products and materials.

Aiming to reduce our negative impacts while also contributing to the transition of the built environment from linear to circular (see "Our Circularity Vision" for more details), we are introducing circularity principles and considerations to the way we do business and interact with our stakeholders.

This chapter showcases the progress we made in 2021 along with our key projects across our business.

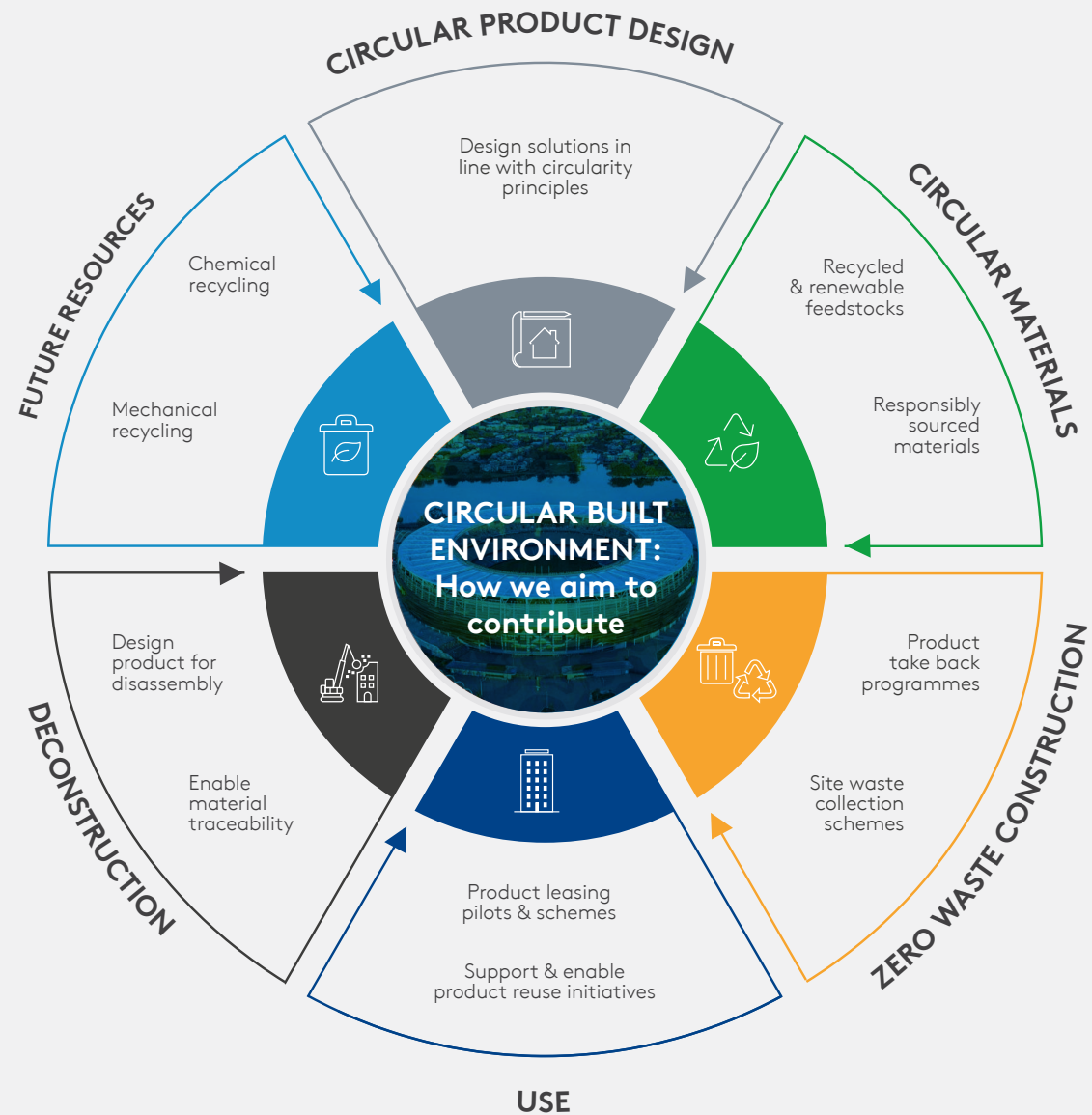
¹: World Green Building Council, Annual Report 2020

²: World Economic Forum, Shaping the Future of Construction – A Breakthrough in Mindset and Technology

OUR CIRCULARITY VISION

Our vision is to help accelerate the transition towards a circular built environment. As a global product manufacturer, we want to play our part to help enable more circular practices within our industry. The current linear model must be replaced with a new circular approach to how we design, construct and dismantle buildings.

We are currently embedding circular thinking and principles throughout our business with numerous active initiatives being explored by our global teams. The accompanying graphic outlines our current focus areas. Ultimately, we are aiming to help facilitate improved circular practices at each stage of a building's life cycle.



PROGRESS AGAINST TARGETS AND KEY HIGHLIGHTS

Company waste to landfill

2021 (t):
16,294



2020 (t):
18,642

The 13% decrease was made possible by targeted waste reduction programmes and by reprocessing our production waste into the manufacturing processes.

Recycled PET bottles into our processes

2021 (million):
843



2020 (million):
573

The 47% increase was made possible by the continued increased sourcing of recycled PET and material received via our collaboration with the ECOALF Foundation's Upcycling the Oceans initiative.

QuadCore™ products utilising recycled PET

2021 (no. of sites):
1



2020 (no. of sites):
1

No additional sites deployed the use of recycled PET during 2021. However, we conducted extensive R&D testing on multiple polyol products to ensure we can deploy QuadCore™ PET in multiple sites in 2022.

EPS foam collaboration

Interview with David Macdonald
Managing Director
Kingspan Unidek



Cradle to Cradle certified

Interview with Seamus Cussen
Managing Director
Kingspan Data & Flooring, EMEA



QuadCore™ circular assurance

Interview with Lizzie Young
Divisional Head of Sustainability
Insulated Panels, West Division



OUR APPROACH TO MANAGING CIRCULARITY AND ITS IMPACTS

The circular economy is an emerging and complex concept, which is challenging 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.

While upcoming policy and legislative frameworks aim to incentivise a circular transition, the infrastructure to enable circular 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 to help address these issues and will continue to adapt our approach as the topic evolves.

To achieve our circularity vision, which is to help accelerate the transition towards a circular built environment, we’ve made circularity a priority in our sustainability agenda; circular economy principles, values and themes are being embedded in the way we operate, innovate and design our products.

We base our approach on the following focus areas:

- BUSINESS MODELS**
 Focusing on capturing embedded value
- OPERATIONS**
 Focusing on optimising efficiency
- PRODUCTS**
 Focusing on delivering more circular products in line with our LIFECycle Framework
- INDUSTRY**
 Focusing on collaboration and establishing partnerships with key stakeholders

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 more circular practices, we are further embedding circular thinking at every level of our organisation. To this end, in 2021, we established our Group Circular Economy Forum, which aims to help co-ordinate and accelerate circularity projects across our global business and the development of future KPIs. In addition, in 2022, Kingspan will launch a new training platform that will include circular economy training resources that will be made available to all employees.



BUSINESS MODELS

Circular business models will help companies to create and capture product value, within closed loops. Our goal is to unlock additional product value by designing and testing business models around circularity opportunities for renewable and recycled raw materials, resource recovery, extended life models and design for recyclability. We aim to adapt our strategies to support customer and market demands, in line with changes in legislative and/or regulatory requirements. Designing and adopting new business models challenge us to innovate, both within our business and in partnership with others. We aim to:










- increase our use of renewable and/or recycled feedstocks for our products
- maximise value retention by taking products back from the market
- facilitate reuse where possible and adopt solutions to remanufacture, recycle or recover materials.

This can only be achieved by strengthening collaboration with our stakeholders across our value chain.

OPERATIONS

Waste

Our efforts to meet our zero-company waste to landfill target are focused on three key principles, Reduce, Reuse and Recycle. Reducing waste while we grow as a business is an ongoing challenge; we have nevertheless made significant progress with waste segregation, and we also plan to bolster our waste data collection systems. 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 re-grinded back into manufacturing, we seek to repurpose and recycle it into other products, thanks to established partnerships with other industry stakeholders.

	2020 - 2021	2021 - 2022
 <div>REDUCE</div>	 <ul style="list-style-type: none"> • Expand waste data collection metrics • Identify areas for improvement • Employee awareness campaign • Waste Working Group 	 <ul style="list-style-type: none"> • Implementation of additional waste reduction projects • Product and region specific Packaging Working Group • Reclaiming of production waste • Implementation of additional take-back schemes
 <div>REUSE</div>	 <ul style="list-style-type: none"> • Encourage use of reusable items • Reuse waste as packaging material 	 <ul style="list-style-type: none"> • Reuse of access floors • Investigation into potential for reuse of Kingspan products
 <div>RECYCLE</div>	 <ul style="list-style-type: none"> • Implement more recycling initiatives • Work with industry to find alternatives to our waste streams • Discuss and negotiate terms of waste management with current providers 	 <ul style="list-style-type: none"> • Additional industry partnerships and collaboration to repurpose our waste • Expansion of Kingspan recycling capacity • Research study on recycling technologies and innovation

Recycled raw materials

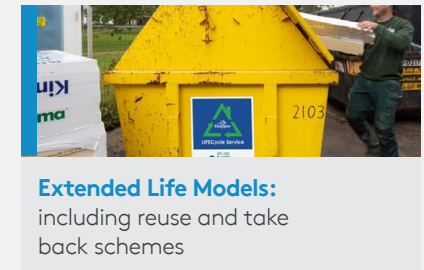
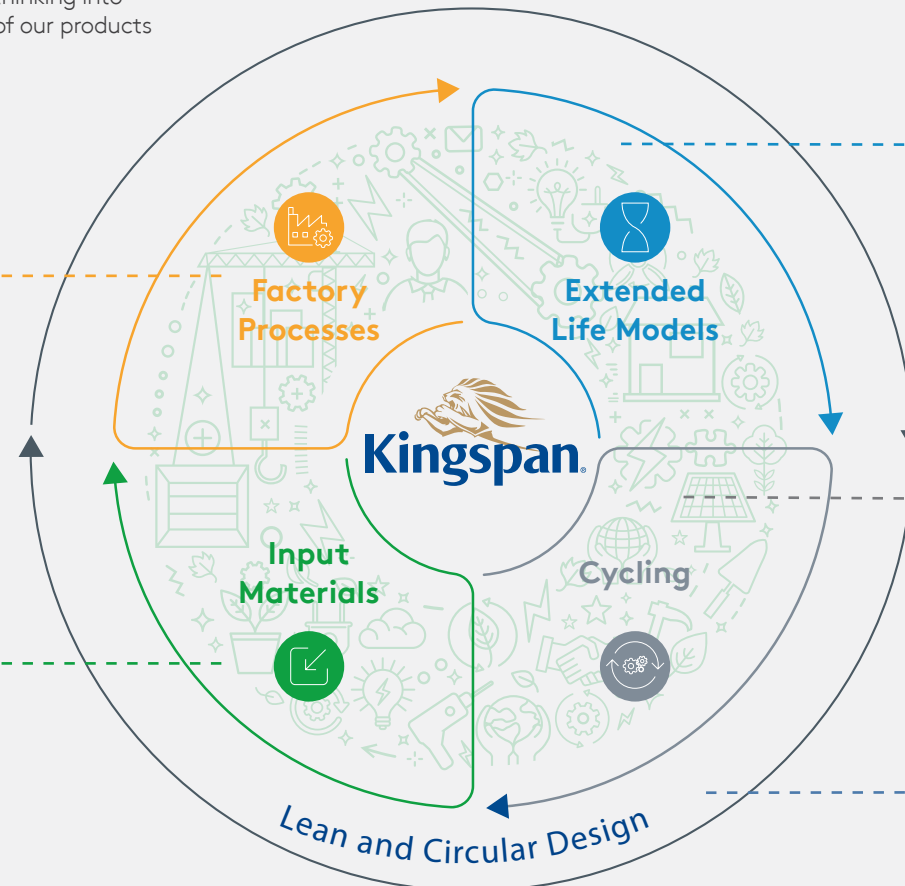
Using renewable, recycled and recyclable input materials that are sustainably sourced is a key element of our circularity strategy. In 2021, we continued to work both internally and with our business partners to collect and recycle PET bottles into our manufacturing processes. In line with our Planet Passionate target, in 2021 we used the equivalent of 843 million recycled PET bottles in our manufacturing processes. Some of which, was used to manufacture QuadCore™ products at our Modesto facility in California, USA.

Our procurement and sustainability teams are actively working on finding recycled raw material options for our key raw materials 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, to help secure future supply of green steel with lower embodied carbon and higher recycled content. Read more about low carbon steel on page 16 and 17.



LIFECYCLE PRODUCT CIRCULARITY FRAMEWORK

As a manufacturing business, our systems and solutions are our key focus. Our LIFECycle Product Circularity Framework allows us to bring circular thinking into product development and benchmark the circularity performance of our products under 5 key themes:



INDUSTRY

Collaboration and partnerships are key enablers of the circular economy. Circular business models rely on a collaborative approach between suppliers, manufacturers, recyclers and waste management experts to close the loop on material consumption and production. While we can't solve all the challenges that a circular economy approach poses in isolation, we can overcome them by leveraging the knowledge and expertise of others and working collectively to reach meaningful solutions. At Kingspan, we aim to close the loop on our operations and processes by partnering with other leaders in the industry, academic institutions, expert consultants and third-party organisations.

New Horizon and the Urban Mining Collective



Kingspan is a partner of New Horizon Material Balance and the Urban Mining Collective. Partners in this collective include producers, distributors and knowledge partners. Every partner has the same circular mission: to make impact with a circular economy. New Horizon harvests raw materials from the urban environment and supplies the market (via the Urban Mining Collective partners) with circular construction materials.

Renewi



Renewi and Kingspan Unidek are involved in a research pilot that addresses construction waste and how to separate EPS and bitumen. As a leading waste-to-product company, Renewi focuses on extracting value from waste by offering innovative solutions, collecting waste streams efficiently, reusing and recycling them into new raw materials. Initial focus will be on the technical feasibility of the project, followed by an analysis of its economic feasibility.



“Renewi continuously seeks collaboration with parties that develop innovative, circular products and services. This type of initiatives are desperately needed, because primary raw materials are becoming more scarce. This is where our collaboration with Kingspan Unidek and PSLoop interlinks.”

Bert-Jan Westerik,
Commercial Director Renewi
Netherlands



Circular Economy Live Projects Forum



As a member of the World Green Building Council and the UK Green Building Council, in 2021 Kingspan joined the Circular Economy Live Projects Forum, which brings together construction clients and project teams who are trying to find and implement circular economy solutions, share learnings, find solutions, and make progress on live projects. The Forum focuses on material reuse and second-hand markets, circular economy performance criteria, metrics and benchmarks and design for circularity.

Ellen MacArthur Foundation



If we want to pursue meaningful progress in our circularity journey, we must first fully understand how to measure it. In 2021, as a member of the Ellen MacArthur Foundation's Network, we completed our first Circulytics assessment. Circulytics is a tool designed by the Foundation to measure a company's circular economy performance, highlighting both strengths and areas for improvement across the company's entire operations. The results of the assessment helped us better understand our material flows and also highlighted areas for improvement, as we strive to become more circular.



WATER

ACCESS TO WATER IS A **BASIC
HUMAN RIGHT** AND A PREREQUISITE
TO **SUSTAINABLE DEVELOPMENT**.

INTRODUCTION

Access to water is a basic human right and a prerequisite to sustainable development. The effects of climate change and increasing population density in some areas are amplifying the increased demand for and shrinking supply of this natural resource. We recognise that water scarcity is a growing global concern and as a global manufacturer, conserving water to lessen our impact on the world's water resources is a priority.

Due to the nature of our business, water constitutes only a small percentage of our material inputs. However, we recognise the importance of this precious resource and aim to manage it in the most responsible manner.

Target

100m

Harvest 100 million litres of
rainwater by 2030

Target

5

Support 5 ocean clean-up
projects by 2025

PROGRESS AGAINST TARGETS AND KEY METRICS

Rainwater harvested

2021 (million l):
20.6



2020 (million l):
20.1

In 2021, 6 new rainwater harvesting projects were installed with a total annual capacity of over 8 million litres.

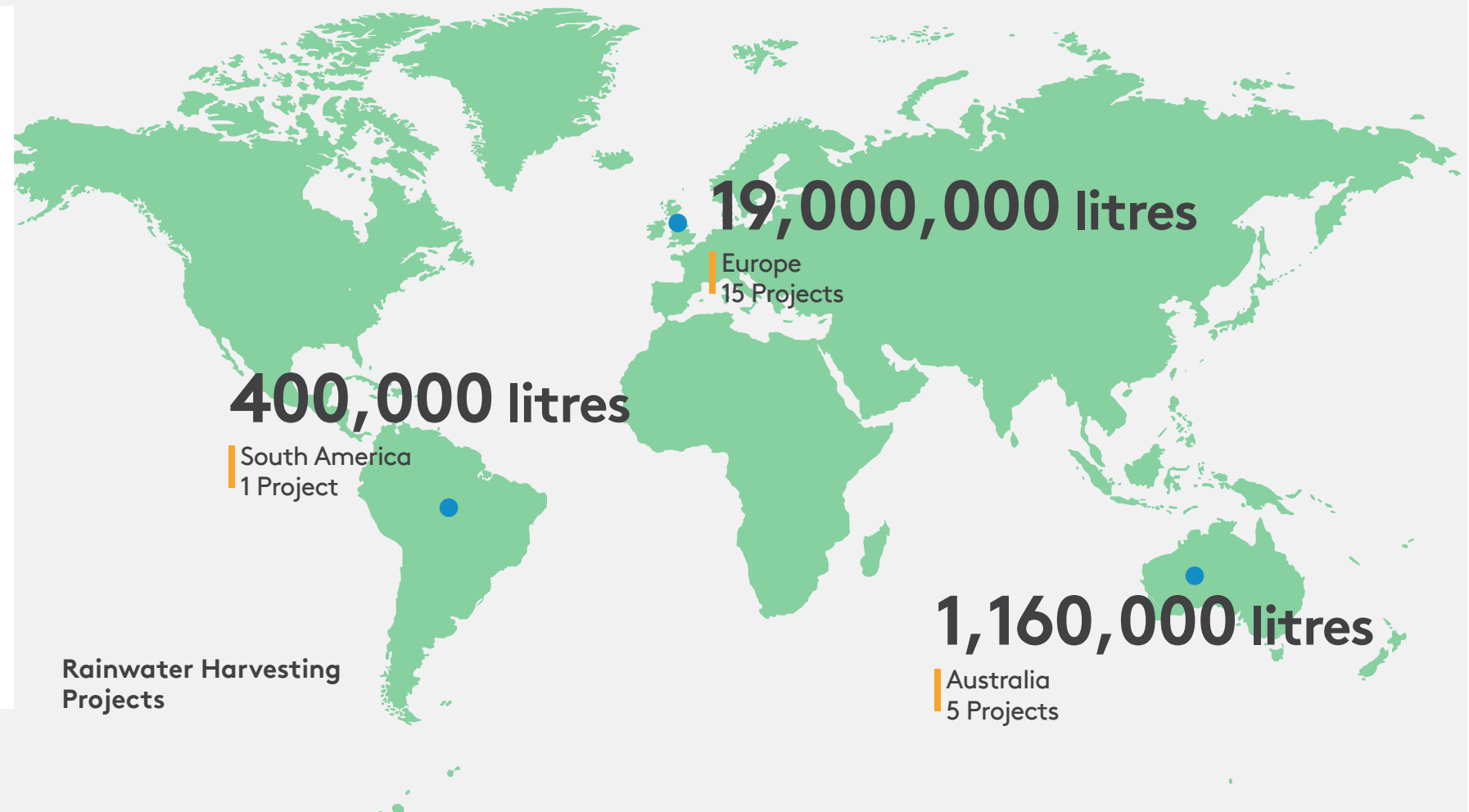
Clean-up projects supported

2021:
2



2020:
1

In 2021, we announced our second ocean clean-up project. We are partnering with Seabin™, a Sydney-based clean tech start-up which is on a mission to clean up the world's waterways.



OUR APPROACH TO MANAGING WATER AND ITS IMPACTS

Through our Planet Passionate programme we aim to maximise water conservation and improve water efficiency by harvesting and using rainwater and other water saving initiatives, such as sensing systems and water flow regulators.

Kingspan monitors water consumption to identify areas for improvement and potential leaks and continues to develop procedures and investigate technologies that will help minimise freshwater withdrawal, as well as mitigating the impact of wastewater released from the site.

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 to harvest 100 million litres of rainwater on our sites by 2030, to help reduce our impact on the water supply that we share

with local communities. 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.



Rainwater Harvesting
Water & Energy Division: Glenamaddy, Ireland

Our Water & Energy division, aiming to further integrate sustainable technologies in its facilities, installed rainwater harvesting tanks in its site in Glenamaddy, Ireland. The rainwater harvesting system is expected to displace the use of 100,000 litres of mains water annually.



Rainwater Harvesting
Data & Flooring Division: Hull, UK

Kingspan Data & Flooring installed three rainwater harvesting tanks at its Hull site in the UK. Each tank has a 1,300 litres capacity.



Rainwater Harvesting
Water & Energy Division: Aston Clinton, UK

In 2021, two 10,000 litre tanks were installed at Water & Energy's Aston Clinton site in the UK.

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 managed sustainably. Unfortunately, human behaviour has created an issue with rubbish in our oceans, and we are committed to both helping raise awareness of this, while helping to clean our rivers and oceans.

Climate change, pollution, resource depletion and acidification are putting a lot of stress on marine ecosystems and environments, threatening as a result, not only the sustainability of global fisheries and biodiversity but also the livelihoods and wellbeing of people who depend on the oceans. We are mindful of the need to clean-up our oceans, removing tonnes of man-made debris and plastic waste.

The UN, at its Ocean Conference in June 2017, stated that more than 8 million tonnes of plastic enters the oceans each year, and that as much as 80% of all the litter in our oceans is plastic waste. 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 have committed to support five ocean clean-up projects to help play a part in tackling this issue. In 2021, we announced our second partnership with Seabin™. We are currently exploring more partnership options close to our facilities worldwide and aim to bring more online in 2022.

Seabin™

Seabin™ is an Australian founded, clean tech start-up, tackling ocean and marine health through marine debris collection, data, education, and community engagement. In June 2020, Seabin™ launched their 100 Cities programme in Sydney, Australia, installing 16 Seabins across the iconic Sydney Harbour.

The Sydney city pilot was hugely successful, collecting over 16 tonnes of marine debris in the 12-month period, and filtering 3.2 billion litres of water, for microplastics, plastic, fibres, oil and other contaminants. Kingspan's support of Seabin™ will include sponsorship of one of the Seabin units in Jones Bay Wharf and will directly contribute to the cleaning of Sydney Harbour's waterways.



The sponsorship will result in direct, measurable impact, with estimations showing the Kingspan sponsored Seabin unit will collect almost 1.3 tonnes of marine debris per annum; the equivalent of almost 31,000 plastic straws.

Jones Bay Wharf is a High-Volume Marine Litter Accumulation Point and currently ranks as a Pi5, according to Seabin™ Pollution Index. For more information, please see Seabin's Sydney City Pilot Impact Report here.



Ocean Health Solutions



ECOALF Foundation

Kingspan continues to support the removal of marine debris from the Mediterranean each year through the ECOALF Foundation's network of 3,200 fishermen. Our aim is to incorporate as much as feasible, of the ocean plastic recovered, into our insulation production.

In 2021, more than 300 tonnes of marine debris were collected by ECOALF Foundation's Upcycling the Ocean project globally. Over the course of 2021, Synthesia Technology utilised 7.6 tonnes of PET sourced from the ECOALF Foundation Upcycling the Ocean's project in their production.

300+
tonnes of marine debris removed by ECOALF foundation in 2021.

CREATING VALUE FOR SOCIETY

While 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 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 a stakeholder as an entity or individual that can be expected to be significantly affected by our activities, products and services, or whose actions can be expected to affect our ability to successfully implement our strategies and achieve our objectives. 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 our programmes, initiatives and memberships during the reporting period.

Investors

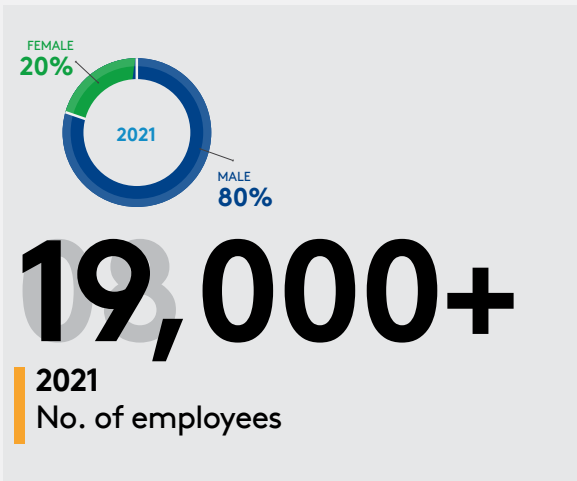
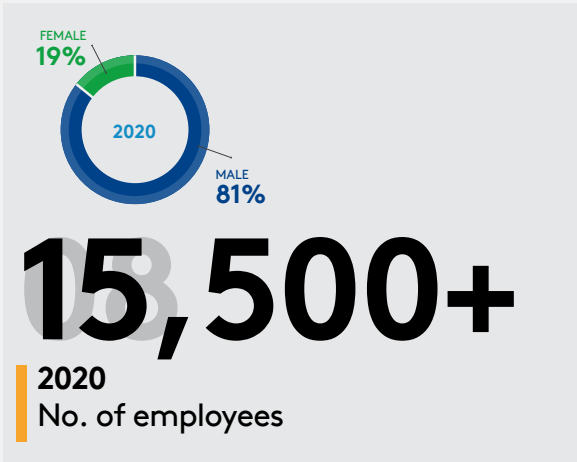
Kingspan is committed to interacting with the international financial community to ensure a full understanding of the Group’s strategic plans and its performance against these plans.

During the year, the executive management and investor team presented at eight capital market conferences and conducted 586 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.



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 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 and Safety at work involves both the prevention of harm, and the promotion of health and well-being.

Accidents Table Title		
	2020	2021
Injury frequency rate (p/100k hours)	1.2	1.2
Fatalities	1	1

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.

We are deeply saddened to report that during the year, a fatal road accident occurred while an employee was travelling between our facilities in Brazil. An investigation is underway to discover the circumstances leading up to the tragedy. Policies and training will be updated to reflect any learnings.

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



Equal opportunities, employee rights and diversity

+

Talent retention

+

30%

of executives reporting to the Group CEO are female

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.

Graduate Attraction and Development

+

Next Generation of Leaders

+

Advanced Management Programmes

+



“Developing internal talent is a key strategic enabler of growth in Kingspan and we make continuous investment in those with the leadership qualities to take on bigger, broader roles and deliver enhanced business results.”



Marie Maguire
Head of Talent Development
Kingspan Group

SUPPLIERS

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 we are, to address strategic global issues, emerging trends and ultimately our customer needs.

Supplier profiling

The materials we procure, and those supplying them, play a key role in delivering on Kingspan’s sustainability ambitions. As part of our ongoing supply chain sustainability work, we review our key suppliers’ commitments to sustainability, both as organisations and on the materials and products they produce.

The suppliers with whom we do business are expected to share our commitment to protect the environment, foster economic prosperity and preserve human rights while reinforcing our collective positive impact on the world around us. We engage with our key suppliers on the following topics:

- Sustainable Procurement
- Public Reporting
- Environment
 - Environmental Management
 - Resource Conservation
 - Waste
 - Localised Emissions

- Ethics
 - Policy
 - Fundamental Human Rights & Labour
 - Remuneration
 - Working Conditions
 - Freedom of Association
 - Occupational Health & Safety

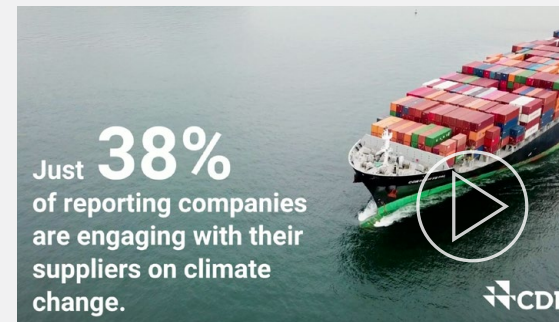
Ecovadis

In late 2021, as part of its updated corporate governance due diligence, Kingspan Group subscribed to Ecovadis. The Ecovadis sustainability management platform will help us monitor and manage our trading partners’ performance, promote transparency, reduce risk and identify areas for improvement. EcoVadis is a sustainability rating platform which assesses a company’s supply chain network under environmental, ethics, labour and human rights, and sustainable procurement criteria. The outcome of the assessment process is a rating scorecard which portrays the sustainability performance of the supplier. We will report on the results of the first year of the implementation in next year’s Planet Passionate report.

CDP Supplier Engagement Leader

Not-for-profit environmental impact disclosure organisation CDP for the third year in a row recognised Kingspan on its Supplier Engagement Leaderboard – an annual assessment of disclosures

about how well individual companies proactively work with their suppliers to ensure sustainability throughout their value chain in terms of climate change mitigation.



Annual Supplier Forum

In November 2019, we held our annual Supplier Forum with specific focus given to our Planet Passionate programme. Productive discussions and workshops were held with a range of suppliers resulting in some collaborative projects that will support the delivery of our goal for a 50% reduction in product CO₂e intensity from our primary supply partners by 2030. We continue to build our supplier relationships and engagement strategy moving forward. Unfortunately, due to ongoing COVID-19 restrictions during 2021, we were not able to hold this event last year but look forward to doing so in 2022.

“Our supplier engagement programme is crucial to enable us to bring innovative high-performance solutions with reduced environmental impact to market, at the pace required to help tackle the climate crisis. We are making good progress on our pathway and will continue to push forward to meet our 2030 goal.”

Mark Broderick
Procurement Director



CUSTOMERS

Everything that our customers experience with Kingspan matters to us. Whether it's the performance of our product solutions, the responsiveness of our service teams or the efficiency of our deliveries, we strive to provide a positive experience to all our customers. To help us achieve our strategic goals we have introduced four key commitment areas into our businesses on which we are focusing as part of our customer excellence programme:

- Deliver a memorable customer experience
- Measure what our customers actually experience
- Continue to innovate.

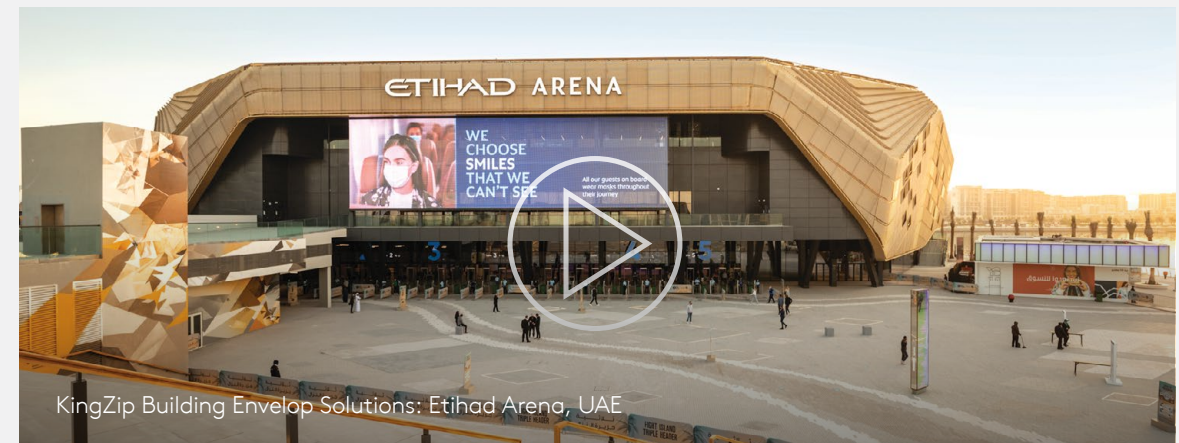


Customer Experience Programme

Our Customer Experience Programme is all about capturing what, how and why our customers experience the things they do. During 2021, we received feedback from 14,000 customers, from over 100 countries. 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, keep our finger on the pulse and provides us with the insight to develop and drive new digital technologies to help make meaningful change happen.

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 2021 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. Projects including:

- **KingCADD Detailer:** a 3D detailing tool, developed via Tekla
- **BIM 360:** Data rich Revit content hosted and distributed on the Autodesk BIM360 platform
- **All Weather Insulated Panels (AWIP)** BIM Tools available [here](#).
- **ISOCAB** BIM Tools available [here](#).
- **BIM Designer:** An online BIM configurator and AR viewer enabling customers to custom configure BIM objects for download in over 140+ file formats.

PLANET PASSIONATE COMMUNITIES

In Autumn 2021, we launched Planet Passionate Communities, the philanthropic arm of our Planet Passionate programme. Through our Planet Passionate Communities initiative, we are striving to support people and communities to create a positive legacy and a better world.

Our initiative is having both a local and global impact. On a global level, we have joined forces with GOAL, the international humanitarian response agency, to develop critical infrastructure with sustainability at its core, in healthcare and education.

On a local level, our businesses are devoting their time and resources to support community projects. By creating a local impact, we aspire to build a world that is powered by renewable energy, net-zero carbon, manages water sustainably, and protects the earth’s valuable resources by reducing, reusing and recycling. We are determined to use our expertise to create positive impacts for people and communities internationally, and to advance the sustainability agenda for all.



We are determined to use our expertise to create positive impacts for people and communities internationally, and to advance the sustainability agenda for all.



Goal Partnership

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.

GOAL was founded in 1977 and is headquartered in Dublin. Over the last four decades GOAL has responded to many of the world's major humanitarian crises and is currently working with vulnerable communities in more than 14 countries.



Puerto Cortes Hospital Honduras

In the first year of the partnership, we will support the build of a new wing at an important hospital in Puerto Cortes, Honduras. The project will be implemented by GOAL's humanitarian support staff on the ground using Kingspan's products and systems to build a state-of-the-art, 24-bed ward for general care in the hospital. The new extension will provide the hospital with increased capacity to provide critical care for patients in a community that has been greatly affected by Covid-19. The new wing will be named in memory of Sayri Molina, a GOAL employee who sadly lost her life to the pandemic and will be remembered for her hard work and selfless commitment to GOAL.

Our partnership with GOAL is the flagship project in our new Planet Passionate Communities programme, which supports projects that provide services for disadvantaged and vulnerable communities while using resources in the most sustainable way possible.



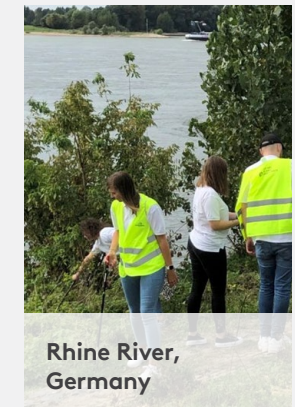
Local action

At a local level, colleagues across our business are allocating time and resources to support projects in their communities that align with one or more of the Planet Passionate four focus areas of Carbon, Energy, Circularity and Water and/or support protection of our natural world. Examples of such activities undertaken throughout 2021 include the implementation of bee sanctuaries at our BALEX Metal, Bolszewo location in Poland and tree planting events in both Russia and Australia.



Clean up projects

The accumulation of litter in our natural environment is a stark global issue. In particular, the vast quantities of debris reaching our oceans every year through rivers are a burden on nature. In 2021, colleagues across our business took part in many different clean-up projects and initiatives. This included beach, river, coastal clean-ups and local area clean-ups.



APPENDICES

- A1: Planet Passionate data metrics
- A2: Environmental and Social indicators
- A3: GRI - Use of the GRI Standards
- A4: SASB
- A5: Climate-related Disclosures
- A6: TCFD - Recommendations and Supporting Recommended Disclosures
- A7: EU Taxonomy
- A8: Assurance statement

Photography Credits:

- Born Free Foundation (p. 7): Born Free Foundation
- Electrification of sites, Jonkoping, Sweden (p. 15): Dan Sjunnesson
- Solar PV, Tiel Spotlight (p. 24): Oranjedak Energy
- Green Chemistry video (p.34): Biorizon
- Belter Tech (p.34): BelterTech
- Circular Roof video (p.34): Urban Mining Collective
- Ellen MacArthur Foundation spotlight (p. 35): Ellen MacArthur Foundation
- PS Loop spotlight (p. 35): Polystyrene Loop
- ECOALF spotlight (p. 39): ECOALF Foundation
- Seabin™ Archive (p. 39): Seabin™

A1: PLANET PASSIONATE DATA METRICS

		2020 UNDERLYING BUSINESS		2021 BUSINESS	
PLANET PASSIONATE METRICS		2020 (A)	2021 (A)	2020 (A)	2021 (A)
Carbon	Scope 1 & 2 GHG emissions ¹ (tCO ₂ e)	312,640 *	299,077	342,589 **	317,071
	Decrease in product CO ₂ e intensity from primary supply chain partners (%)	-	-	-	-
	Zero emission company cars (annual replacement %)	11	29	11	28.5
Energy	Direct renewable energy (%)	19.5*	26.1	19.5*	24.8
	On-site renewable energy generation (%)	4.9*	4.8	4.9*	4.6
	Wholly owned facilities with rooftop solar PV (%)	21.7	28.4	21.7	29.2
	Net-Zero Energy (%)	100	100	100	100
	Total Energy Use (GWh)	639.6	732.2	639.6	772.7
	Purchased Direct Renewable Energy (GWh)	98.3	163.7	98.3	163.8
	On-site Generated Renewable Energy Consumed (GWh)	26.3	27.4	26.3	27.8
	Total On-site Generated Renewable Energy (GWh)	31.1	35.3	31.1	35.6
	Wholly-owned sites (No. Sites)	92	102	92	106
	Sites with solar PV (No. Sites)	20	29	20	31
Circularity	Company waste to landfill (tonnes)	18,642*	16,294	18,642*	17,090
	PET bottles recycled into our processes (million bottles)	573	843	573	843
	QuadCore™ products utilising recycled PET (No. Sites)	1	1	1	1
Water	Rainwater Harvested (ML)	20.1*	20.6	20.1*	20.6
	Ocean clean-up projects supported (No.)	1	2	1	2

Note 1: 2020 Underlying Business includes manufacturing & assembly sites within the Kingspan Group in 2020 and organic growth (excluding acquisitions).
 Note 2: 2021 Business includes all manufacturing & assembly sites within the Kingspan Group
 1: excluding biogenic emissions
 * Restated figures due to improved data collection methodologies
 ** 2020 GHG emissions were recalculated due to structural changes that occurred in 2021 and to improved data collection methodology

A2: ENVIRONMENTAL AND SOCIAL INDICATORS†

	2020	2021
ENERGY		
Total energy consumption (GWh)	639.6	772.7
Total energy consumption from renewable sources (GWh)	124.6*	191.6
Total energy consumption from non- renewable sources (GWh)	515.0*	581.1
Energy intensity (MWh/€m of Revenue)	140	119
Net-Zero Energy (%)	100	100
Fuel consumption within the organization from non-renewable sources (GWh)	389.6*	469.8
Fuel consumption within the organization from renewable sources (GWh)	18.7*	23.3
Electricity consumption (GWh)	231.6*	237.5
Heating consumption (purchased) (GWh)	4.1	6.5
Electricity generated and sold (GWh)	4.8	7.8
Heating generated and sold (GWh)	0	0
Direct use of renewable energy (%)	19.5*	24.8
On-site energy generation (%)	6.5*	6.6
On-site renewable energy generation (%)	4.9*	4.6
Total on-site renewable energy generated and used (GWh)	26.3*	27.8
Biofuels	10.9*	10.9
Biomass	4.5*	4.7
Ground/air source heat pumps	0.01	0.4
Hydro	0.3	0
Solar	8.3*	10.7
Wind	2.3	1.1
% of wholly owned facilities with installed PV systems	21.7	29.2

† The scope for our environmental data is our 2021 Business (includes all manufacturing & assembly sites within the Kingspan Group)

* Restated figures due to improved data collection methodologies

	2020	2021
CARBON		
Scope 1 GHG emissions (tCO ₂ e)	328,191**	309,494
Biogenic GHG emissions (tCO ₂ e)	12,420**	16,287
Scope 2 GHG emissions (market-based) (tCO ₂ e)	14,399**	7,578
Scope 2 GHG emissions (location-based) (tCO ₂ e)	73,812**	71,491
GHG emissions intensity ¹ (tCO ₂ e/€m of revenue)	68.3	48.8
Scope 3 (tCO₂e)		
Purchased Goods and Services	3,997,323	5,757,390
Capital Goods	37,427	47,971
Fuel and Energy related activities	32,736	46,914
Upstream transportation and distribution	139,623	202,559
Waste Generation in operations	4,607	7,245
Business travel	23,917	31,100
Employee commuting	20,669	25,410
Downstream transportation and distribution ²	-	-
Use of Sold Products	406,213	420,101
End of life treatment of sold products	380,515	404,195
Non-HFC process emissions (not included in Scope 1) (tCO ₂ e)	8,747	8,172
Zero emission company cars (annual conversion of replacement cars to zero emission cars) (%)	11	28.5
Zero emission company cars (% of total fleet)	2.4	10

Note1: GHG emissions calculations only include manufacturing and assembly sites on the basis that most of the CO₂e emissions are generated from manufacturing sites. 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 CO₂, CH₄, N₂O, HFCs, PFCs and SF₆. 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 GHG emissions intensity ratio includes scope 1, scope 2 (market-based) (not including biogenic emissions)

² 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.

** 2020 GHG emissions were recalculated due to structural changes that occurred in 2021 and to improved data collection methodology

A2: ENVIRONMENTAL AND SOCIAL INDICATORS† (CONT'D)

	2020	2021
CIRCULARITY		
PET bottles recycled into our manufacturing processes (million)	573	843.5
Waste generated (t)	94,312*	113,895
Hazardous waste (%)	6.7	7.8
Recycled waste (%)	67.6*	64.7
Waste to Landfill (%)	19.8*	15.0
Waste to Landfill (t)	18,642*	17,090
WATER		
Total water consumption (million l)	437.8*	550.2
Third-party water withdrawn (million l)	345.6*	415.4
Ground Water (million l)	72.2	114.2
Surface Water (million l)	0	0.01
Harvested rainwater (million l)	20.1	20.6
AIR EMISSIONS		
NOx (t)	n/a	240
SOx (t)	n/a	28

† The scope for our environmental data is our 2021 Business (includes all manufacturing & assembly sites within the Kingspan Group)

* Restated figures due to improved data collection methodologies

OUR RATINGS
CDP. Score: A-
MSCI: Kingspan Group Plc has been rated as AA in the MSCI ESG rating.
SUSTAINALYTICS: As of December 2021, Kingspan Group Plc received an ESG Risk Rating of 17.9 from Sustainalytics and was assessed to be at LOW risk of experiencing material financial impacts from ESG factors.
ISS ESG: Kingspan Group Plc has been rated as Prime for corporate ESG performance by ISS ESG.

	2020	2021
SITES WITH ISO CERTIFICATIONS		
Number of sites with ISO 9001 certification	75	88
Number of sites with ISO 14001 certification	66	78
Number of sites with ISO 45001 certification	64	76
Number of sites with ISO 50001 certification	20	23
Number of sites with ISO 37301 certification	-	9
EMPLOYEE DATA*		
Number of employees	15,757	19,384
Female	19%	20%
Male	81%	80%
Western & Southern Europe	7,898	8,845
Central & Northern Europe	3,970	5,861
Americas	2,786	3,411
Rest of World	1,103	1,267
HEALTH AND SAFETY		
Health & Safety Investment (€)	4,825,148	7,010,859
Total Recordable Incident Rate (TRIR)**	2.43	2.37
Injury Frequency Rate (p/100k hours)	1.2	1.2
Fatalities	1	1

* Employee numbers are expressed as head count.

** Calculated based on both full-time and contract employees.

A3: GRI - USE OF THE GRI STANDARDS

This Report references: Disclosures 102-1, 102-2, 102-3, 102-4, 102-5, 102-12, 102-13, 102-14, 102-16, 102-18, 102-42, 102-50, 102-51, 102-52, 102-53 from GRI 102: General Disclosures, Disclosures 302-1 and 302-3 from GRI 302: Energy 2016, Disclosures 305-1, 305-2, 305-3 and 305-4 from GRI 305: Emissions 2016.

GRI DISCLOSURE	SECTION	PAGE
GRI 102: General disclosures 2016		
102-1: Name of the organization	About this Report	01
102-2: Activities, brands, products and services	Kingspan Group – Who we are	05
102-3: Location of headquarters	Kingspan Group – Who we are	05
102-4: Location of operations	Kingspan Group at a glance	03
102-5: Ownership and legal form	About this Report	01
102-12: External initiatives	Our approach to sustainability	06,07
102-13: Memberships of associations	Our approach to sustainability	07
102-14: Statement from senior decision-maker	A Message from our CEO	02
102-16: Values, principles, standards and norms of behavior	Kingspan Group at a glance	03
102-18: Governance structure	Kingspan Group – Who we are	05
102-42: Identifying and selecting stakeholders	Creating value for society	40
102-50: Reporting period	About this Report	01
102-51: Date of most recent report	About this Report	01
102-52: Reporting cycle	About this Report	01
102-53: Contact point for questions regarding the report	About this Report	01
GRI 302: Energy 2016		
302-1: Energy consumption within the organization	A2: Environmental and Social indicators	50
302-3: Energy intensity	A2: Environmental and Social indicators	50
GRI 305: Emissions 2016		
305-1: Direct (Scope 1) GHG emissions	A2: Environmental and Social indicators	50
305-2: Energy indirect (Scope 2) GHG emissions	A2: Environmental and Social indicators	50
305-3: Other indirect (Scope 3) GHG emissions	A2: Environmental and Social indicators	50
305-4: GHG emissions intensity	A2: Environmental and Social indicators	50

A4: 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	Carbon	Long-term and short-term carbon strategy and targets to manage Scope 1 emissions are outlined in the Carbon chapter.	EM-CM-110a.2
Air Quality	Air emissions of the following pollutants: (1) NOx (excluding N ₂ O), (2) SOx, (3) particulate matter (PM10), (4) dioxins/furans, (5) volatile organic compounds (VOCs), (6) polycyclic aromatic hydrocarbons (PAHs), and (7) heavy metals	A2: Environmental and Social indicators	We're currently reporting only on NOx and SOx. We will explore the possibility of reporting on the rest of the categories in future reports.	EM-CM-120a.1
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage alternative, (4) percentage renewable	A2: Environmental and Social indicators	-	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	A2: Environmental and Social indicators	32% of total water withdrawn 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	A2: Environmental and Social indicators	-	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
Workforce Health & Safety	1) Total recordable incident rate (TRIR) and (2) near miss frequency rate (NMFR) for (a) fulltime employees and (b) contract employees	A2: Environmental and Social indicators	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

A5: CLIMATE-RELATED DISCLOSURES

CLIMATE GOVERNANCE

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. Almost 60% of Kingspan’s product set 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 to also be cognisant of any underlying and emerging risks.

Kingspan is presently broken into ten operating businesses. 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. Therefore, there is representation from all aspects of the business. 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.

Management’s role

Furthermore, 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. These are the formal processes by which risks and opportunities which have been identified in the business are notified to the CEO, and where they are assessed and monitored.

Each of Kingspan’s ten operational businesses has its own management team, with the Managing Directors responsible for managing all the opportunities and risks within that business, including those relating to climate-change. Prior to the divisional reviews highlighted above, the Managing Directors conduct a similar review with all the business units within their divisions. All underlying and emerging risks and opportunities are assessed and updated at these meetings, which are then fed back into the executive level monthly divisional review. The Managing Directors are ideally positioned to consolidate the risks and opportunities across their relative divisions as they can assess the outlook across multiple dimensions including commercial, operational and financial, and across multiple geographies. Managing Directors also have the authority and resource to act where needed. On average, Kingspan Managing Directors have

responsibility for approximately 1,500 employees, 16 manufacturing facilities and €500 million of revenue.

CLIMATE-RELATED RISKS AND OPPORTUNITIES

Time horizons

Kingspan considers a short term (2020 - 2025) horizon for assessing climate-related risks and opportunities to be in line with its science-based target and some Planet Passionate targets, a medium horizon (2026 - 2030) for assessing climate-related risks and opportunities 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) and a long term (2031 - 2050) horizon to 2050 in line with the strategy for the transition to a low-carbon economy recognized in the Paris Agreement and EU Low Carbon Economy Roadmap to 2050.

Risks and opportunities

Kingspan defines substantive financial or strategic impact on its 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 2020, for example, that would be any risk that would potentially impact group trading profit (EBITA) by €25 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 2020, for example, that would be any risk that would potentially impact trading profit (EBITA) by €25 million.


- **Strategic:** Kingspan considers any strategic risk which has the potential to impact revenues by over 5% as substantive. In 2020, for example, that would be any risk that would potentially impact revenue by over €200m.

- **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.

Kingspan considers a wide array of risk types in its climate-related risk assessments. These include current and emerging regulation, technology, legal,

Kingspan Group	Approach to Sustainability	Carbon	Energy	Circularity	Water	Creating value for society	
<p>market, reputation and acute and chronic physical. For more information, please refer to our latest CDP response, available on our website.</p> <p>Processes for identifying, assessing and responding to climate-related risks and opportunities.</p> <p>Downstream risks and opportunities, as they relate to climate-change, are managed through a multi-disciplinary, company-wide, risk management process. Kingspan is split in to seven operational divisions. The senior teams in each division meet monthly with at least two executive directors, including the CEO. These senior teams have representatives including management, finance, operational, technical and commercial directors. Therefore, there is representation from all aspects of the business. At these divisional reviews, risks or opportunities that are deemed substantive are brought to the attention of executive directors and are assessed on a divisional basis. This review process is replicated within each division, with each business unit, in advance of the divisional review. Substantive risks or opportunities include those which have the potential financial impact of more than 5% of Group EBITA or 5% of Group revenue, or risks which may have a strategic or reputational impact as deemed by the senior teams. Further, Kingspan hosts a full strategic review of the business annually. This review includes all aspects of the business, it covers short-, medium- and long-term strategic decisions which include any climate change risks assessments or opportunities. There are multiple strands within the business for identifying risks and opportunities</p>		<p>as they relate to our downstream value chain. Our commercial teams liaise with customers, building owners, design teams and architects daily and feedback 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 and the assessment of whether the risks or opportunities are substantive and further escalated to business unit and divisional reviews where relevant.</p> <p>Upstream risks and opportunities, as they relate to climate change, are managed through a specific climate related risk management process. At Group level, we actively engage and monitor our supply chain partners performance in relation to climate change to identify any upstream activities, products and services that are material to our business activities that may pose climate related risks or opportunities. We recognize the need to minimise the carbon used to produce our products, the majority (>75%) of which comes from the raw material stage. Management of upstream risks and opportunities are the responsibility of the Group Sustainability team and Divisional Procurement teams. An annual scope 3 emissions screening and key supplier carbon assessment is undertaken to help identify any new risks and to reassess the impacts of risks that have already been identified. Risks and opportunities can be escalated during the bi-monthly reviews of the Head of Sustainability and Head of Procurement with the CEO. Our CEO also has direct updates with key suppliers on the climate change agenda to assess whether the risks or opportunities are substantive and further action</p>		<p>is required. The decision to mitigate, transfer, accept or control the identified risk is determined based on the specific risk or opportunity identified. For more information on our processes, please refer to our latest CDP response, available on our website.</p> <p>Risks</p> <ul style="list-style-type: none"> • Substitution of existing products and services with lower emissions options: Kingspan's strategy is to be the global leader in innovative building envelope solutions that reduce the resource consumption of buildings, lowering the long-term running costs and the environmental impact of those buildings. Innovation is a key facet to our strategy and Kingspan has market leading products, particularly in the field of building insulation. Kingspan strives to be the market leader with the most advanced solutions. Failure to innovate ahead of our competitors is a risk to our business model. Should a competitor innovate an insulated panel product with substantially superior carbon saving performance to QuadCore™, it could take share from QuadCore™ and PIR core insulated panels. • Changing customer behaviour: We market our product's impact on resource efficiency, particularly in relation to in use energy and carbon saving benefits. The embodied carbon in our insulation materials is insignificant relative to the impact of carbon saved through our products' lifetime in use. To be a market leader in carbon efficient solutions, we aim to achieve 		<p>significant carbon reductions in both our manufacturing process and via our primary raw material supply partners. Failure to engage with our suppliers and actively work towards reducing upstream carbon emissions could negatively impact customer preferences.</p> <ul style="list-style-type: none"> • Emerging regulations: Carbon pricing mechanisms: One of the EU's objectives is to reduce emissions from the EU's 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 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 agenda, to reduce our emissions. • Emerging regulations (upstream): Carbon pricing mechanisms: 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 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. Our approach to date has been to actively engage with our suppliers on this issue 	

Kingspan Group	Approach to Sustainability	Carbon	Energy	Circularity	Water	Creating value for society	 PLANET PASSIONATE
<p>to better understand their strategies, challenges and potential areas of collaboration. We see this risk as having a Medium-low impact for Kingspan given our strategic commitment to innovation and our scale of innovation in comparison with our peers.</p> <ul style="list-style-type: none">Increased severity and frequency of extreme weather events such as cyclones and floods: Kingspan recognizes the potential negative impacts represented by increased risk of flooding 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 audits and self-assessment questionnaires. <p>Opportunities</p> <ul style="list-style-type: none">Use of public-sector incentives: In October 2020, the EU adopted the strategic communication on the Renovation Wave which contains an action plan with the aim to at least double the annual energy renovation rate of buildings by 2030 and to foster deep renovations. 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 the fact that dimension is a key constraint in refurbishment. We estimate the potential impact as high		<p>for Kingspan given our product range and geographic exposure (€470-940 million). While this opportunity should start to impact in the short-term (out to 2025), it will support renovation revenue over the long-term, out to 2050.</p> <ul style="list-style-type: none">Development of new products or services through R&D and innovation: Innovation is a key facet to our strategy and Kingspan has market leading products, particularly in the field of building insulation. Kingspan strives to be the market leader with the most advanced solutions. Should Kingspan innovate an energy efficient product with substantially superior carbon saving performance to alternates, it could accelerate share gains from traditional insulation. In addition, Kingspan will continue to grow its market share in innovative technologies like QuadCore and Kooltherm. We estimate the contribution from recent innovation could add €300-500m of annual revenue over the short-term.Development of climate adaptation, resilience and insurance risk solutions: Kingspan is the market leader in advanced insulation materials as they relate to the building envelope. Our strategy is to convert construction methods from inefficient, traditional technologies to high-performance, energy efficient technologies. The conversion to high performance, energy efficient building envelopes, from traditional construction methods, has been a successful	<p>strategy for Kingspan for decades. 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. We estimate conversion to higher performance insulation materials can add ~3-4% organic growth above construction macro, which is approximately €90-120m in revenue annually.</p> <ul style="list-style-type: none">Access to new markets: Kingspan recently invested in new territories including Iberia, Latin America and India. We have announced our organic development plans for an additional 15 sites or operational lines around the world, five of these new facilities are in relatively new geographies for Kingspan and most are in geographies which are at an earlier stage of development for high-performance materials. Kingspan’s short- and medium-term strategic plans include ambitions to expand to markets in which we are not active today, but the timing and scale of this expansion is difficult to give guidance on. We estimate the contribution from access to new markets could add €250-500m of annual revenue.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	<p>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.</p> <p>For more information on our climate-related risks and opportunities, please refer to our latest CDP response, available on our website.</p> <p>How climate-related risks and opportunities have influenced our strategy</p> <ul style="list-style-type: none">Products and services: Kingspan recognises climate related risks and opportunities in its products and services strategy. In 2016, 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 solution 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			

Kingspan Group	Approach to Sustainability	Carbon	Energy	Circularity	Water	Creating value for society	 PLANET PASSIONATE
<p>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. This division was nascent for Kingspan in 2016, at the end of 2020 it had a 12-month revenue run rate in excess of €500m.</p> <ul style="list-style-type: none">• Supply/value chain: We recognise the need to minimise the carbon emitted due to the manufacture of our products, much of which comes from the raw materials in our value chain. To be a market leader in carbon efficient solutions, we took the strategic decision to set targets and strategies to realise significant carbon reductions in both our manufacturing process and via our primary raw material supply partners. Mitigation activities include establishing our Sustainability Team to monitor emissions and implement projects internally and externally to reduce Scope 1, 2 & 3 emissions; significant engagement with our supply partners at the highest level; and ongoing R&D projects with new and existing suppliers with a view to reducing Scope 3 emissions. A substantial outcome of these mitigation activities has been the investment by Kingspan (March 2021) in H2 Green Steel (H2GS). Steel is a key raw material for Kingspan and the largest contributor to our Scope 3 emissions. H2GS aims to be producing	<p>steel in 2024 with 95% less carbon than comparable steel today.</p> <ul style="list-style-type: none">• 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. 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. Work at IKON will drive future product innovation at Kingspan, cementing our position as the market leader in energy efficient building envelope products. Kingspan’s commitment to innovation has resulted in market leading technologies. A key example of this would be Kingspan’s development of PowerPanel which we hope to launch in late 2021 or early 2022.• Operations: In 2019 we updated our strategy to reduce energy consumption and increase our use of renewable energy with the launch of our Planet Passionate programme. Within this programme we have targets to a) increase our direct use of renewable energy to 60% by 2030; b) increase our on-site generation of	<p>renewable energy to 20% by 2030; c) install solar PV systems on all wholly owned facilities by 2030; and d) to reduce carbon emissions in our primary raw materials by 50% by 2030. This strategy will reduce Kingspan’s energy consumption from the grid and reduce the carbon associated with our energy consumption, therefore reducing the risk associated with increased, carbon related, energy costs. Kingspan arranged a €50m Green Loan in 2019 to support these initiatives.</p> <p>How climate-related risks and opportunities have influenced our financial planning</p> <ul style="list-style-type: none">• Revenues: Kingspan is planning for significant future revenue impact from climate related risks and opportunities. Kingspan’s core strategy is to convert construction markets from inefficient, traditional methods of construction, to constructing with high-performance building envelopes, which reduce energy consumption and carbon emissions. Kingspan’s innovation strategy supports our market leader position by having the most efficient and high-performance insulation technologies. Kingspan has expanded the conversion opportunity through investment in new technologies and new geographies. We expect growth to be supplemented by incentives to renovate the building stock in line with the objectives of the Paris Agreement.• Direct Costs: The key area in which direct costs are likely to be impacted as a result of climate	<p>change is electricity costs. One of Kingspan’s strategic objectives is to be the world’s leading provider of low energy building envelopes. To complement that strategy, Kingspan set about reducing its own non-renewable energy consumption. We have a target to source 60% of our energy requirements directly from renewables by 2030, reducing energy price risk.</p> <ul style="list-style-type: none">• Indirect Costs: Kingspan aims to lead the advancement of materials, building systems and digital technologies to address issues such as climate change and circularity. In order to meet these strategic objectives, Kingspan must invest in indirect expenses, such as R&D, a technically educated sales team and the Planet Passionate (Sustainability) Team. The largest indirect cost related to climate-change is R&D. We invest c.1% of revenue annually on R&D and digital innovation, €33.1m in 2020. These investments support revenue growth and protect against risks to revenue and rising energy costs.• Capital Allocation and capital expenditure: Kingspan invested €171m in 2020 (€353m in 2019) in assets, including M&A. Kingspan has been investing in manufacturing capacity to support our expectation of increased revenues from opportunities such as the conversion to low-carbon building envelope technologies. We have 15 new lines planned over the next 2-3 years. In addition, Kingspan invested in a new state-of-the-art innovation facility to				

support ongoing development of low-carbon technologies to further support that conversion strategy.

- Acquisitions:** Kingspan invested €46m in 2020 (€142m in 2019) on acquisitions. Kingspan has historically used mergers and acquisitions (M&A) as a route to execute our strategy. Kingspan acquires businesses for three reasons: i) to consolidate an end market, augmenting our ability to convert that market to high-performance building envelopes which save energy and carbon; ii) to expand to new geographies which are generally at an earlier stage in their adoption of high-performance building envelopes, a significant long-term growth opportunity; and iii) to acquire new technologies which complement our energy and carbon efficient building envelope solutions.
- Access to Capital:** Kingspan has enjoyed ready access to capital given our structural growth opportunity through manufacturing climate mitigating construction materials. In 2020, Kingspan issued a sustainability aligned €750m Green Private Placement. This loan has favourable terms, aligned with Kingspan meeting its Planet Passionate objectives. And will fund the growth of the business over the short to medium-term.

- Assets:** Investment in assets is a continuation of investment in high-performance building envelope technologies and capacity. Kingspan is constructing low carbon assets and improving the performance of our current estate.
- Liabilities:** One notable change is the inclusion of the €750m green Private Placement loan which has favourable terms, aligned with meeting our sustainability objectives. The following case study should demonstrate the way in which multiple financial planning metrics have been impacted by climate related planning.

A6: 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.	A5 - Climate-related Disclosures	54
b) Describe management’s role in assessing and managing climate-related risks and opportunities.	A5 - Climate-related Disclosures	54
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.	A5 - Climate-related Disclosures	54
b) Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.	A5 - Climate-related Disclosures	54
c) Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	A5 - Climate-related Disclosures	54
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.	A5 - Climate-related Disclosures	54
b) Describe the organization’s processes for managing climate-related risks.	A5 - Climate-related Disclosures	54
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization’s overall risk management.	A5 - Climate-related Disclosures	54
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.	A2 - Environmental and Social indicators A5 - Climate-related Disclosures	50,54
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	A2 - Environmental and Social indicators	50
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	CARBON ENERGY	11,21

A7: 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 Turnover

Numerator: Included in the numerator for taxonomy eligible activities² 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.

Key assumptions:

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

- Where steel work cannot be assigned directly to an insulated roof or wall system it has been excluded.
- Fixings or accessories sold with insulated panel systems have been included under Annex I, 3.5. Where a business sells fixings or accessories along with both insulated and non-insulated systems, and the proportion is not known directly, these have been included as eligible in proportion to insulated versus non-insulated turnover.

Denominator: Kingspan’s total revenue as disclosed in our 2021 preliminary results and in Note 2 of our 2021 Annual Report¹.

Taxonomy Operational Expenditure

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

Denominator: Direct non-capitalised costs that relate to R&D, 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.

Operating expenditures are included in ‘Cost of sales’ and ‘Operating costs excluding intangible amortisation’ as per the Consolidated Income Statement on page 122 of our Annual Report with detail on the total R&D expense of €40.9m in Note 5 of our 2021 Annual Report¹.

Taxonomy Capital Expenditure

Numerator: Items in the denominator relating to taxonomy eligible 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 10, 11 and 16 of the 2021 Annual Report¹). The denominator shall also cover additions to tangible and intangible assets resulting from business combinations as defined in Note 11 and Note 22 of our 2021 Annual Report¹. Goodwill is not included in the denominator.

Taxonomy Eligible and Non-Eligible breakdown		
Turnover	€ m	%
Taxonomy-eligible activities	4,093.0	63%
Taxonomy non-eligible activities %	2,404.0	37%
Total Turnover €m	6,497.0	
Capital Expenditure	€ m	%
Taxonomy-eligible activities	281.7	77%
Taxonomy non-eligible activities	84.4	23%
Capital Expenditure Denominator	366.1	
Operating Expenditure	€ m	%
Taxonomy-eligible activities %	78.4	77%
Taxonomy non-eligible activities %	24.0	23%
Operating Expenditure denominator	102.4	

¹ <https://ks-kentico-prod-cdn-endpoint.azureedge.net/kingspan-live/kingspanglobal/media/financial-updates-2022/kingspan-2021-annual-report-ie-en.pdf>
² as defined by REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 June 2020, Article 10

A8: ASSURANCE STATEMENT



LRQA Independent Assurance Statement Relating to Kingspan's Greenhouse Gas Emission Assertion for the financial year 2021

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 greenhouse gas emission assertion ("GHG 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 data¹
- 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
 - 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 GHG 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.

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.

¹ <http://www.ghgprotocol.org/>

² GHG quantification is subject to inherent uncertainty.



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 GHG Assertion for FY 2021:

Type	Quantity	Units
Scope 1 GHG emissions ²	309,494	Tonnes CO ₂ e
Biogenic Scope 1 GHG emissions ²	16,287	Tonnes CO ₂ e
Scope 2 GHG emissions (Location-based) ^{1,2}	71,491	Tonnes CO ₂ e
Scope 2 GHG emissions (Market-based) ^{1,2}	7,578	Tonnes CO ₂ e
Scope 3 GHG Emission Categories ¹ :		Tonnes CO ₂ e
C1: Purchased goods & services	5,757,390	
C2: Capital goods	47,971	
C3: Fuel & energy related	46,914	
C4: Upstream transport & distribution	202,559	
C5: Waste generated in operations	7,245	
C6: Business travel	31,100	
C7: Employee commuting	25,410	
C9: Downstream transport and distribution	-	
C11: Use of sold products	420,101	
C12: End-of-life treatment of sold products	404,195	
Non-HFC Process Emissions (not included in Scope 1 emissions)	8,172	Tonnes CO ₂ e
Total Energy Use	773	GWh
% of wholly owned facilities with installed solar PV systems	29.2%	
Annual conversion of company replacement cars to Electric Vehicles (EV)	28.5%	
PET bottles recycled into our manufacturing processes	843,505,977	
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 GHG emissions data and records,
- interviewing relevant employees of the organization responsible for managing GHG emissions data and records; auditing Kingspan's data management systems to confirm that there were no significant errors, omissions or misstatements in the GHG Assertion, and
- verifying historical GHG emissions data and records at an aggregated level for the financial year 2021.

Observations

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

- Materiality:

We are not aware of any material issues concerning Kingspan's GHG assertion that have been excluded from the data set.
- Reliability:

Data management systems are considered to be well-defined, but the implementation of the systems was 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: 11 February 2022

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

LRQA reference: LRQ00003522/4986852

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kingspan.com



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 and integrity, and compliance with the law, are the foundation upon which our strategic pillars sit.



Strategic pillars

Innovation

Planet
Passionate

Global

Completing
the envelope



Strategic Goals

To advance materials, building systems and digital technologies to address issues such as climate change, circularity and the protection of our natural world.



To be the world's leading provider of low energy, sustainably produced, building envelopes – Insulate and Generate.



To expand globally, bringing high-performance building envelope solutions to markets which are at an earlier stage in the evolution of sustainable and efficient building methods.



CASE STUDY

Protection of our natural environment: BORN FREE

7 Cubs. 2 Sets of twins.

We are delighted to report the birth of 7 cubs in 2021 to the pride, including 2 sets of twins.

Planet Passionate Report
Case Study



Born Free 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. 2021 marked the second year of our 3-year partnership with Born Free – a partnership that supports Born Free's Pride of Meru lion conservation programme. Kingspan provide vital funds to Born Free which assist with activities such as lion monitoring, and collaring. Born Free also works with rural communities that live on the fringes of lion territories, helping them to understand the message of coexistence and to provide practical solutions to any potential conflict.

As part of their lion monitoring, in 2021, the Pride of Meru team added 13 additional individual lion profiles to their lion ID database, bringing the number to 65 individual lions (from a known population of 68). The ID database helps the team track lions and their movements, across the landscape.

Camera-trap surveys are a well-established, non-invasive and effective survey technique used to estimate carnivore population densities. At the end of 2021, Born Free purchased 40 camera traps for an extensive camera-trap based carnivore survey in the

Meru Conservation Area. The images collected by the camera traps will enable Born Free to identify problem animals that are straying close to communities, help monitor wildlife populations and convey more about lion movement and behaviour.

Unfortunately, during routine lion monitoring work throughout the year (up to end Nov 2021), the team observed over 100 incidents of human encroachment and activity in the protected areas. 97 of these observations were of livestock that were driven by pastoralists into the protected area to find suitable grazing lands. Drought has been particularly severe this year, forcing many people to turn to the remaining resources in the protected areas to stop their livestock from dying.

During the year the team also uncovered 25 snares in a two-month period. In the Meru Conservation Area, most of the snares are being laid by community members in an attempt to put food on the table. These are families who are experiencing economic hardship, in part due to long-term poverty, but also the economic stress caused by the Covid-19 pandemic and the aforementioned prolonged drought. However, snares are a cruel and indiscriminate method of trapping animals. Many animals die a slow and agonising death when trapped in a snare. For

those who manage to escape, they can be left with horrendous injuries for the rest of their likely shortened lives.

Over 2021, the threat snares impose on threatened was experienced first-hand by the Pride of Meru team. Moja, one of the males from the George coalition, was sighted with a snare around his neck in April. The Kenya Wildlife Service vets were immediately called and under sedation, the deadly snare was removed. Then again, in July, ReQ, Elsa's small cub, was sighted with a snare around her small neck. She too was treated by the KWS vets and thankfully both lions fully recovered.

Born Free is determined to end snaring in Meru. In 2022, in collaboration with the Kenya Wildlife Service, the Born Free Kenya (BFK) team will begin to train local community members as eco-scouts. They will remove and destroy snares from Meru, whilst working closely with the communities to help people rely less on natural resources.

40

Camera traps deployed
in October 2021



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.

Throughout 2021, the Board continued to refine and improve its corporate governance practice in line with the principles of the 2018 UK Corporate Governance Code (the 'Code').

The Board consistently strives to ensure that its reporting continues to be meaningful in detailing how it integrates the Code's principles within its decision making. The Board continues to make enhancements to our governance processes and this translates to less governance risk, based on our purpose, values, strategy, business and outlook. The Board is 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.

"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."

Board level committees

Audit & Compliance committee

The audit committee assists the board by taking delegated responsibility for risk identification and assessment, in addition to reviewing the group's risk management and internal control systems and making recommendations to the board thereon. The chairman of the audit & compliance committee reports to the board at each board meeting on its activities, regarding both audit matters and risk management.

Remuneration committee

Central to the committee's approach to remuneration are the principles of simplicity, pay for performance and transparency. The remuneration committee comprises of three independent non-executive directors.

The Nominations & Governance committee

The nomination and governance committee leads the process for appointments while ensuring plans are in place for orderly succession to both the board and senior management positions.

SUSTAINABILITY GOVERNANCE

Our Chief Executive Officer (CEO) of the Board 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 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 and social 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 14 representatives from across the business units. The Planet Passionate divisional representatives are responsible for driving the strategy across their division and management of the divisional level Planet Passionate team.

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



Group level committees

Planet Passionate Committee

The Planet Passionate Committee oversees the implementation and general management of the programme throughout the business. It is chaired by the Group Head of Sustainability with representatives from the divisional teams. The Committee meets on a quarterly basis, before and after the quarterly Planet Passionate team meetings.

Health & Safety Committee

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

Circular Economy Committee

The Circular Economy Committee is a newly formed Committee, which commenced proceedings in Q3 2021. It is chaired by the Group Head of Sustainability with representatives from the divisional teams. The Committee meets on a quarterly basis to discuss ongoing Group and divisional level projects and help disseminate knowledge and best practices.

CASE STUDY

Jönköping

In July 2021, we opened our new Kooltherm insulation manufacturing site at Jönköping, Sweden. The manufacturing process is fully electrified and is powered by renewable electricity and renewable district heating. A rooftop solar PV system comprising of 3,500 modules will generate approximately 1.1 GWh of renewable electricity per annum, contributing to the site's overall energy needs. The site only uses electric forklift trucks. The building's heat is partially provided via a heat recovery system that utilises excess heat from the manufacturing process. This project is a pivotal example of constructing a manufacturing site in line with our Planet Passionate ethos and provides a blueprint for future Kingspan facilities.

Process Electrification & Rooftop Solar PV

Site Information:

Country:

Sweden

Division:

Insulation

Renewable energy sources:

Solar PV, Electricity, District Heat

Manufacturing process:

Kooltherm

% renewable:

>95%

"The new Kooltherm line in Jönköping, Sweden uses more than 95% renewable energy and is an exemplar project because our Planet Passionate principles were considered in the design stage, from inception to commissioning."

Deon Joubert
Planet Passionate Leader
Insulation



1.1

GWh/annum estimated
annual Solar PV generation

3,500

PV Modules installed and
fully commissioned



CASE STUDY

Hull

Our Data & Flooring manufacturing site at Hull, UK is powered by 81% renewable energy. The site's renewable energy sources are an on-site biomass system, renewable electricity from the grid and a rooftop solar PV installation. The PV array comprises of 1,040 PV modules and produces approximately 215,800 kWh of renewable electricity per annum. In 2021, an electric crane was installed to replace existing diesel forklifts. In addition, four 22 KW charging stations were installed in preparation for converting 15 of the 22 company cars to zero emissions.

Biomass & Rooftop Solar PV

Site Information:

Country:

United Kingdom

Division:

Data & Flooring

Renewable energy source:

Electricity, Solar PV, Biomass

Manufacturing process:

Raised Floor Panel Production

% renewable:

81%

tCO₂e avoided:

1,377 per annum

"Our aim has been to lower our environmental impact at every stage and align ourselves with Planet Passionate's 10 year ambitious programme. We are now not just a more sustainable business, but a more profitable one; as well as reducing our carbon footprint, the changes have enabled us to optimise our operational costs also."

Paul Smith

Head of Operations, Hull UK
Data & Flooring



1,377 tCO₂e

Estimated carbon savings
per annum

1,040

PV Modules installed and
fully commissioned

CASE STUDY

Parainen

In 2021, our insulated panel manufacturing site at Parainen, Finland underwent a major transformation in order to become more Planet Passionate. The oil boiler heating system was replaced with an Industrial heat pump system which utilises the waste heat from the plant's production (laminator) and stores the waste heat in the ground wells to use as needed. A 599 KWp rooftop solar PV system was installed, comprising of 1,620 PV modules. This will generate 0.5 GWh of renewable electricity/yr, with estimated carbon savings of 87,200 kg per annum. Together, the systems will generate 1.5 GWh of renewable (electricity and heat) energy providing 33% of the site's total energy demand.

Ground Source Heat Pump & Rooftop Solar PV

Site Information:

Country:

Finland

Division:

Insulated Panels, CEER

Renewable energy source:

Solar PV, Heat pump

Manufacturing process:

Mineral Fibre panel line

% renewable:

67%

tCO₂e avoided:

387 per annum

"The PV rooftop system installed in Parainen Paroc Panels System plant is a huge step to increase on-site generation of energy and to reduce the carbon emissions of the plant. The PV system may generate up to 20% of all electricity used by the plant."

Artur Krzywulski
Planet Passionate Leader
Insulated Panels, CEER



387 tCO₂e

Estimated carbon savings per annum

1,620

PV Modules installed and fully commissioned

Paroc
Panel
System



CASE STUDY

Glenamaddy

In 2021, the Water & Energy site at Glenamaddy, Ireland became one of the first manufacturing sites across the Group to power its manufacturing process with 100% renewable energy. The site's renewable electricity is provided via the grid and a new contract with Calor Ireland now provides 4.8 GWh of BioLPG annually. The BioLPG will cover approximately 90% of the site's total energy demand.

Conversion to BioLPG

Site Information:

Country:

Ireland

Division:

Water & Energy

Renewable energy source:

BioLPG, Electricity

Manufacturing process:

Rotational Moulding

% renewable:

100%

tCO₂e avoided:

721 per annum

"Over the past five years, the introduction of renewable electricity to our Glenamaddy site has delivered a significant reduction in our carbon emissions, and we're now proud and delighted that the introduction of another renewable and sustainable energy source – BioLPG – has enabled us to reach our goal of the plant being powered by 100% renewable energy."

Aidan Roberts
Planet Passionate Leader
Water & Energy



721

tCO₂e

Estimated carbon savings per annum

4.8

GWh of BioLPG per annum

CASE STUDY

Centre of Excellence (COE)

In April 2021, Kingspan Light + Air's Centre of Excellence at Kingscourt, Co. Cavan came into operation. COE uses 100% renewable electricity to power its fully electric manufacturing process. The next planned project is the installation of Solar PV panels in 2022 and the estimated energy generation is 448 MWh per annum.

Process Electrification & Renewable Electricity

Site Information:

Country:

Ireland

Division:

Light + Air

Renewable energy source:

Electricity

Manufacturing process:

Extrusion lines

% renewable:

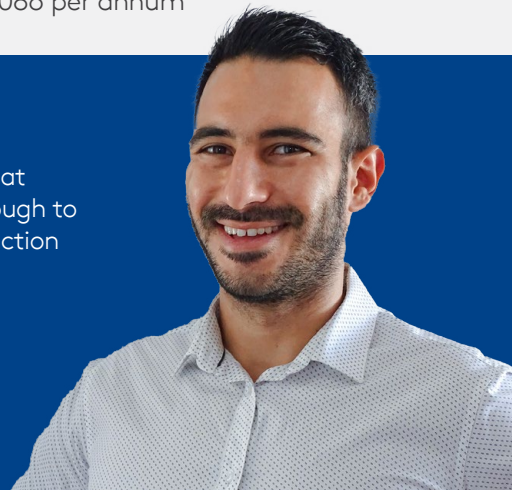
99.9%

tCO₂e avoided:

1,086 per annum

"The Daylight Centre of Excellence is not only about sustainable design and construction; the innovations in improved air quality, daylight and aesthetics create great physical and mental health benefits for those lucky enough to work in it. The Planet Passionate programme in construction will be a major pillar not only for saving costs, but for increasing sustainability and human wellbeing."

Aristides Ioannou
Planet Passionate Leader
Light + Air



INTERNAL ENGAGEMENT



Planet Passionate Programme toolkit

Sustainability is at the forefront of Kingspan's strategic and global agenda. To increase employee engagement and enable employees to be Planet Passionate both at work and at home, we are developing an extensive programme toolkit. These resources, including a Planet Passionate Employee Guide & e-learning module, an enhanced Planet Passionate Internal Visibility Toolkit and a Sustainability Claims Guide & e-learning module, will allow employees to learn more about the programme and help grow its presence throughout the business.



Internal Visibility Campaign

In 2021, we launched an internal Planet Passionate visibility campaign across our global sites. The aim of the campaign was to increase employee awareness and reinforce the presence of Planet Passionate in the workplace. The initiative included posters such as "Think before you print", floor vinyls and live moss wall features, which also have environmental benefits as they improve air quality by removing pollutants and dust and reducing moisture. Other initiatives included: 'Ditch the bin day', where individual desk bins were removed and replaced with segregated shared office bins instead.



Workshops for Balex Metal employees at Waste Disposal Plant

Balex Metal, a business within the Joris Ide division, conducted educational workshops for employees covering the topic of waste streams and the preferred disposal methods for each. The aim of this project was to increase employee awareness of waste processes highlighting the key role each employee plays in the process and the hope that their acquired knowledge and understanding will filter beyond the workplace.



Local Clean-up initiatives

During the year, many of our employees across the group took part in local clean-up initiatives. One such example, was the collaborative beach clean-up on World Clean-Up Day, where several Kingspan employees conducted a beach clean on Clogherhead beach, Ireland, in conjunction with Big Blue Ocean Clean-up. Over the two-hour beach clean that day, 34kg of waste was collected.

CASE STUDY

H2 Green Steel

In 2021, Kingspan announced an investment in H2 Green Steel ('H2GS'), a company pioneering new green production methods for steel manufacturing using green hydrogen. They are on a mission to undertake the global steel industry's greatest ever technological shift by eliminating almost all CO₂ emissions from the steel production process.

The production process will replace coke and coal with green hydrogen to achieve an almost CO₂-free steel product. The green hydrogen gas will be produced by electrolysis using electricity generated from hydropower and wind power in the Boden-Luleå region in northern Sweden.

The region offers unique conditions for green steel production, with access to renewable energy sources, high-quality iron ore, and a cluster of world-leading expertise in metallurgy and steel production. It will be the world's first large-scale green steel production site. Production will commence in 2024, and by 2030 the plant will be producing 5m tonnes of green steel annually.

Moving to use of lower emissions steel would make a substantial contribution towards Kingspan's 2030 goal of cutting scope 3 emissions from its supply chain by 50%, by delivering up to a 35% reduction in the Group's scope 3 emissions. It would also enable Kingspan to reduce the embodied carbon in its insulated panel products by up to 45%.



UP TO
45%

Use of lower emissions steel would enable Kingspan to reduce the embodied carbon in its insulated panel products by up to 45%.



UPDATED MORE AMBITIOUS SCIENCE- BASED TARGETS

Planet Passionate Report
Case Study

BUSINESS
AMBITION FOR **1.5°C** 

In 2020, we signed the Business Ambition for 1.5°C commitment, answering an urgent call to action from a global coalition of UN agencies, business and industry leaders, in partnership with the Race to Zero.

By signing the letter, we aligned our climate mitigation targets with the most ambitious aim of the Paris Agreement and to what science dictates is necessary to reduce the destructive impacts of climate change on human society and nature: to reach net-zero global emissions by 2050 at the latest in order to limit global warming to 1.5°C.

RACE TO ZERO



To this end, we chose to voluntarily update our existing science-based targets to bring them in line with a 1.5°C future. The updated, more ambitious targets were approved by the Science-Based Initiative in June 2021 and classified our ambition as aligned with a 1.5°C trajectory.

You can find more information on how we're planning to meet these targets in the "Our 2030 Carbon Pathway" section of the Report.

For more information on the Business Ambition for 1.5°C, please visit this [link](#).



Scope 1 & 2

Kingspan commits to reduce absolute scope 1 & 2 GHG emissions 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.

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





ELECTRIC VEHICLES

Expanding our electric vehicle (EV) and EV charging network



First EV at Balex Metal
Joris Ide Division



EuroCLAD EV Additions
Insulated Panels, West Division



EV Charger installed at Monterrey, Mexico
Insulated Panels, Mexico Division



EV Charger installation and Electric Vehicle, Australia
Insulation Division



EV Charger installed at Tiel, Netherlands
Insulation Division



PRODUCT EMBODIED CARBON

Planet Passionate Report
Product Embodied Carbon

Addressing product level embodied carbon is a top priority. Our goal is to help enable low carbon buildings of the future. Together, our Planet Passionate and innovation agendas are aligned to help deliver reduced embodied carbon products as soon as possible.

Environmental Product Declarations

The result of our actions to reduce carbon across our value chain will be the delivery of high performance, low carbon products that help to minimise the whole life carbon impacts of buildings. Embodied carbon impact data is presented at product level through our third party verified EN 15804 Environmental Product Declarations (EPDs). The information helps to 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 (WGBC) advancing net-zero roadmap for manufacturers.

We are actively working to increase the amount of EPDs available for our range of products. We have commissioned bespoke LCA tools for both the Kingspan Insulation and Insulated Panels divisions enabling us to bring EPDs to market more efficiently. An additional benefit of this approach is the

ability to assess embodied carbon impacts for new product development. This will be utilised by Kingspan as part of product development initiatives, to test how new and innovative materials and manufacturing processes will affect the environmental impacts of our products as we strive to produce products with even lower impacts.

Kingspan EPDs are available via:

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



INTERVIEW

H2 Green Steel: Accelerating the decarbonisation of steel production

Lars Lundström
Chief Sustainability Officer
H2 Green Steel



What opportunities did H2 Green Steel (H2GS) identify that made you decide to embark on a journey to change and improve a traditional, energy-intensive industry? How did the idea come about?

The general idea behind H2 Green Steel came from our founders, Harald Mix and Carl-Eric Lagercrantz, who are also the co-founders of Northvolt (building a giga factory for green batteries in Northern Sweden). The idea materialised during discussions with several of Northvolt's customers in the automotive industry; customers with high climate ambitions. Trying to address the high carbon footprint from steel and other input materials was a logical next step in their climate strategy. Finally, we are also inspired by Hybrit, the other new Swedish steel project.

What end markets do you think are the most exciting when it comes to replacing traditional, high-carbon steel with green steel? And how do you view Kingspan as a good fit for H2GS?

The demand for our green steel products is high, and especially from companies with high ambitions for their climate work. During our start-up phase we experienced high levels of interest from the automotive industry, white goods manufacturers and construction material companies like Kingspan. We also experienced certain interest from large European steel distributors, who play an important role across many industrial value chains. Companies like Kingspan, that are prepared to work closely with us and have a special focus on both a lower carbon footprint and the development of new steel products, at a very early development stage, are extremely valuable to us.

What were the main challenges you faced getting the company off the ground and what will be the main challenges moving forward?

We want and need to move fast; to contribute to the Paris agreement, to meet the demand for green steel and to be a leader in the transition of the European steel industry. Speed is a part of our strategy. But building a new steel plant in just 4-5 years naturally comes with challenges, as no new steel mills have been built in Europe since the 1970s. Right now, we are working focused on environmental permits, detailed technical design and the financing of our development and roll out. In the long term, we will also need to make sure we attract the best global talent to Northern Sweden; we need that for our long-term success, but it is also important for the broader green industrial transition in the region.

Given the increasing interest in sustainable solutions, what does the future hold for H2GS beyond the Boden-Luleå plant?

We see the need and we feel the demand. We are starting with production of green steel in Northern Sweden, but our plans go beyond that. We want to contribute to the transition of other hard to abate industries, and we see green hydrogen production as an important vehicle for that. To this end, we already announced a partnership with the Spanish-based energy company Iberdrola, which for us was a logical next step.

How do you think the steel industry will adapt to an increasing demand for green steel?

We believe that the steel industry, both in Europe and globally, desire and need to be part of the transition. We want to be an accelerator and a lighthouse project, showing that decarbonisation is possible for the steel industry. And we already see some positive initiatives from our industry peers, that might have been accelerated by the launch of H2 Green Steel.

Do you see recycled steel playing a part in the transition to low-carbon, green steel?

Even though the world needs green virgin iron to meet increasing demand for steel, it is crucial to reduce its carbon footprint. For the steel industry to become more efficient and to reach climate neutrality it needs to also close loops and improve the rate of recycling. We are designing our plants with that consideration in mind, where we can produce steel partly with recycled materials, but nevertheless a significant share of virgin iron will be important going forward.



INTERVIEW

EPS foam collaboration

David Macdonald
Managing Director
Kingspan Unidek



What is the PolyStyrene Loop Cooperative and why did Kingspan Unidek decide to partake in this initiative?

The PSLoop Cooperative is a non-profit organisation set-up to develop a scalable, circular solution for polystyrene insulation waste. It brings together organisations from across the supply chain including manufacturers, suppliers, converters and recyclers to enable and contribute to the realisation of solutions. Kingspan Unidek is a founding contributor of the cooperative in Ireland, the Netherlands, Spain and the United Kingdom.

As a designated recycling HUB, Kingspan Unidek is responsible for collecting and pre-processing the waste EPS insulation and then sending it to the PSLoop demonstration plant. To maximise transport efficiency and reduce related emissions, the pre-processing step involves compressing the expanded polystyrene (EPS).

Participation to this partnership pilot project is not only driven by our sustainability ambitions. The renovation sector is growing fast and many valuable resources are being lost in the demolition process, including EPS, which is traditionally removed to be incinerated or disposed in landfill. To make the recycling and recovery possible is of huge importance to better resource efficiency in the industry. The plant needs to demonstrate that it is not only technically feasible but economically as well.

In 2020 in Europe approximately 33,000 tonnes of PS-foam demolition waste was generated, which was suitable for treatment by the PolyStyrene Loop. In 2050, this figure will have raised to almost 100,000 tonnes (Conversio, 2020¹). The PSLoop pilot facility has the capacity to process approximately 3,300 tonnes per annum and volumes can be expanded to 10,000 tonnes.

¹Conversio, 2020, Waste generation, waste streams and recycling potentials of HBCD-containing EPS/XPS waste in Europe and forecast model up to 2050

What are the benefits of the PSLoop technology compared to traditional approaches to EPS recycling?

Through an innovative process, EPS materials are dissolved and purified before being transformed into the granulated recyclate with no loss of material quality. The HBCD flame retardant used in older EPS boards is safely removed and destroyed within this process whilst the valuable bromine component is recovered. New EPS doesn't contain this flame retardant and is shredded at our location for recycling.

After the processing by PSLoop, the recyclate will go back into the supply chain and will be used in the manufacture of our own EPS boards, creating a truly circular process. This is a promising solution to closing the loop on EPS foam.

Partnership and collaboration are at the centre of circular business models and are key elements of Kingspan's approach to circularity. Do you take part in any other collaborative project or initiative?

We actively approach companies that are like-minded in realising the transition to a circular economy. We want to collaborate with all parties in the value chain and we appreciate the opportunity to learn from each other. Next to that, we feel it is our responsibility to take the lead and initiate collaboration that contributes to finding solutions to the challenges ahead. Several of our customers have already become partners and we hope to inspire others as well.

We are actively involved in several collectives, like the Urban Mining Collective, which focuses its efforts on collecting demolition waste and reusing building materials. Through this Collective, the partnering businesses were able to develop a completely circular roof

system that can be dismantled, reassembled and reused. It is a different business model that offers a take-back scheme, combined with regular maintenance by one of the parties involved.

Another example of how we actively engage with other actors in the industry is our collaboration with Leadax. Leadax shares a similar circularity vision to Kingspan and recently launched Roov, a sustainable and circular roofing membrane, made of recycled glass fibres.

How does Kingspan Unidek plan to transition from linear to circular business models? Do you have specific targets in place, in addition to Planet Passionate ones?

We have embedded the Planet Passionate objectives into our strategy and operations, and we have focused our efforts on three main areas: improving the sustainability of our plant and production process; reducing the environmental impact of our products; avoiding EPS-waste materials from going to incineration or landfill. But we are aiming to improve even further, by reducing the environmental footprint of our products; implementing waste take back systems and separating EPS from blended materials like roofing membranes or wall plaster; investing in research together with partners in the market to overcome these challenges and look actively into viable alternatives.

In comparison to other insulation materials, EPS is relatively easy to recycle without losing its quality. Therefore, this facilitates and encourages us to create a fully circular process and to contribute to future-proof energy efficient buildings.

Note: This interview was conducted in November 2021.



INTERVIEW

Kingspan Data & Flooring embraces circularity through Cradle to Cradle Certification and reuse scheme

Seamus Cussen
Managing Director
Kingspan Data & Flooring EMEA



Kingspan Data & Flooring is one of the first raised access flooring companies to have achieved the Cradle to Cradle standard. What strategy and projects did you put in place to achieve the bronze medal?

The decision to undertake the Cradle to Cradle certification stemmed from a number of milestones we had achieved, including increasing the volume of recycled wood in our chipboard core to 80%, the installation of our self-sufficient biomass boiler that uses offcuts of wooden panels, end of life panels and sawdust to reheat our manufacturing facility, our onsite LED upgrade project, the transition to electric forklifts and improvements in our embodied carbon results captured in our EPDs. Receiving the Cradle to Cradle bronze medal was the result of 12 months' work by our cross functional team based in Hull, UK and in addition we sought the help of environmental experts Eco Intelligent Growth to support us in our discovery process. It was important that we had the support of an external consultant to allow us to be objective in the information we shared. Our focus is now on improving our current standards as part of our circularity journey.

What improvements do you think can be made to achieve a higher certification mark?

Our team is already exploring how we can move from Cradle to Cradle certified Bronze to a Silver accreditation. A significant contributor to our embodied carbon is our steel components. Although over the past few years we made efforts to reduce the volume of steel in our products while still maintaining the same great standard, it remains our largest carbon contributor. We are excited to support the transition to low carbon steel and the collaboration that is taking place across the Group supporting H2 Green Steel. This is the step our business needs to support the transition to a low carbon circular economy.

What other initiatives is the Data & Flooring division implementing as part of its circularity journey?

In tandem to improving our Cradle to Cradle certification, we are collaborating with key stakeholders in our industry across the UK sourcing reused floor panels for suitable projects. The market appetite for reuse has recently and rapidly increased. However, there is still work to do to enable reuse at scale. Availability of supply, the condition of the reuse panels and the uncertainties about warranty and how to obtain it with reused products, are some significant barriers to reuse. At Kingspan we continue however to educate our partners on the benefit of reuse and we support our clients in realising lower carbon impact projects with this additional service.

Can you describe the new reuse service and the quality assurance process?

Data & Flooring are happy to offer reused raised access floor panels on projects where it is safe and practical to do so in specific areas of projects. We will only reuse Kingspan Raised Access Floor Panels from our current product range and not those of our competitors. We work closely with our customers to identify suitable locations to reinstall reused panels. Our division has successfully worked on a number of different projects, where reused raised access floors have been used in specific areas in low volume, alongside new floor panels, that have complimented strategies to improve BREEAM ratings. Our long-standing in-house project management team and certified installers, are then on hand to provide dedicated onsite support, during the installation process.



INTERVIEW

QuadCore™ circular assurance

Lizzie Young
Divisional Head of Sustainability
Insulated Panels, West



What is the additional value offered by the new QuadCore™ warranty?

QuadCore™ Assured is our robust warranty, underpinned by third party independently tested products and externally audited processes. Besides assuring the building's thermal and fire performance, Kingspan also warrants a panel take-back scheme to enable our QuadCore™ insulated roof and wall panels to be reused or recycled at the end of their warranty period of 25 years. This initiative facilitates a more circular end of life solution for our product and is in line with our commitment to landfill avoidance.

Beyond the fact that I believe this new service is a unique selling point in the marketplace, it provides a form of value to what is currently considered 'waste' which we hope incentivises other market players to join us and most importantly help construction material avoid landfill. Ultimately the circular economy seeks to reduce the need for new raw materials so if we can utilise our old products to make new products, or indeed reuse our products on new applications this is the first step in being on that journey. With our new QuadCore™ Warranty offer, we are able to ensure that either of these options are easily available to our customers when they choose our product.

What will happen to QuadCore™ panels once recovered from clients after use?

A panel will be returned to a Kingspan facility by the customer and will go down one of three routes: refurbishment, recycling or downcycling. Currently, the technology is in place to deliver on all three but I am excited to see the other innovations in the market to come to commercial fruition so we can do even better at these processes – more efficient, more options and importantly I am hoping to see more market demand on the built and waste sectors to innovate and come up with more sustainable options.

Policy and legislation initiatives are increasingly promoting reuse, recycling and resource efficiency within businesses and will eventually force manufacturers to take back their products at end of life. Do you see this as an issue or an opportunity for the building sector?

I truly believe it's a huge opportunity to innovate, build bridges to different sectors and learn lessons. Some sectors, like the fashion sector for example are a few years more established in the Circular Economy. We all still have a very long way to go but through memberships with the Ellen MacArthur Foundation we can meet with colleagues from more advanced sectors and use their learnings to accelerate our journey.

What are the barriers that you have encountered in developing the new warranty and take back scheme?

The idea was initiated by our commercial and senior management teams and agreement drawn up by them, so internal buy in was not a barrier. From a practical perspective, the challenge is committing to just one technology and one avenue for the 'waste' proved difficult to start with. This means we commit to landfill avoidance as far as is practicable and will ensure the material is kept at the highest value possible. This allows us to learn from and invest in the options that are available to us today, and over time, as demand and available solutions evolve, we will be in a position to adopt new solutions and technologies.

Where do you think QuadCore™ products currently stand in their circularity journey and what goals do you see achieving in the upcoming years?

I would say they are at the beginning of their journey. We are 2 years into a 10-year sustainability programme that puts the circular economy at the front and centre of our business. Whilst we have made great progress in that period through have been running trials, investing in start upstart-up businesses and funding higher education on the subject, we are still at the beginning of the transitional process. Circularity is the long game: it's all about systems changing in a very fundamental way, so with patience will come great change.

Our ultimate ambition is to install take back facilities cross all regions where Kingspan operates within. At product level and as part of our LIFEcycle Product Framework, we are looking to include more recycled and biobased content into the core of our panels. Our suppliers are on this journey with us and I see a future QuadCore™ product that has higher recycled content, lower embodied carbon, manufactured in zero waste facilities, powered by renewable energy and I'm excited for that, not so distant, future.





LEAN AND CIRCULAR DESIGN

Embedding circular thinking within product design strategies is a crucial first step in the development of new innovative circular solutions. We are actively working on several initiatives in our business, with our suppliers and with industry partners.



Design resources

The Group sustainability team is working with the Innovation and Research & Development teams to develop and launch a sustainability checklist, which will be used both as a design tool and as a guide to integrate circular thinking at every step of the product design, from design strategy to environmental impact and material selection. The goal is to design not only for longevity but also for reusability, repairability and recyclability.

Circular Foam

We are also actively working on other circular design initiatives such as the design of a reusable panel via the EU funded Circular Foam Consortium project, coordinated by Covestro. Find out more information [here](#).



**CIRCULAR
FOAM**

NEW FIRST FULLY CIRCULAR ROOF



Circular Roof

Our partnerships and collaborations are also allowing us to make significant steps towards delivering circular solutions, such as the Circular Roof launched by New Horizon Material Balance, together with Kingspan Unidek and other members of the Urban Mining Collective. This design concept consists of a fully mechanically fastened roof structure made from reusable and recyclable materials. At the end of its life, the roof structure can be completely dismantled and more than 90% of its materials and components can be recovered.





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 compositions and green chemistry solutions aiming to find suitable, lower environmental impact alternatives. Engaging with our key raw material suppliers is an important element of our strategy and we will work with them with the ambition of bringing innovative, circular products to market soon. We are actively working on 30 input material projects across our divisions.

For more information on Recycled Raw Materials view page 33.



BioMass Balanced portfolio

EPS insulation consists of 98% air and only 2% raw materials. Styrene, which is used to produce these raw materials, can be partially replaced by renewable raw materials (organic waste). The new Kingspan Unidek Bio portfolio, which is designed based on the Mass Balance method, ensures that renewable raw materials have been allocated to the product based on the REDcert2 certified method. They contribute to a significant CO₂ reduction, while the general properties and quality of the products remain completely identical to those of the regular products.

Sustainable packaging

Switching to renewable, recycled and easily recyclable materials with low environmental impacts is a high priority. While availability of these materials at the scale required is still limited, we are working intensively on numerous, promising research projects and we have already made progress on some of them. We are in the process of investigating packaging material options that are renewable or made with high levels of recycle content, that can be widely recycled or reused. Several of our manufacturing sites are already integrating more renewable materials into their packaging materials (such as honeycomb cardboard and timber pallets) or using to replace plastic-based solutions. This goes hand in hand with our packaging take back services that allow us to either reuse valuable materials or recycle them.



Green Chemistry

We are continually researching and testing potential new recycled or renewable raw material alternatives. Sustainable and circular chemistry is a central focus of our research and development, and we conduct this work in collaboration with renowned academic institutions and industry partners. For example, in 2021 we joined the EU-funded Biorizon project, and together with global feedstock providers, technology developers, process operators and brand owners, we are prototyping and testing bio-aromatics from bio-based renewable feedstocks. Bio-aromatics provide potential new functionality and an impactful and green alternative to petrochemical derived products.





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 resource efficiency of our manufacturing processes by increasing renewable energy use and minimise waste generation. Where it is not possible to avoid manufacturing waste, scraps and cut offs are grinded, pelletised and introduced into the manufacturing process. Trials are currently ongoing to investigate how some of our waste streams could be reutilised by other industries and divert waste from landfill. To improve waste reduction, segregation and recycling rates, a tailored cross-divisional Waste Working Group has been set up and Waste Management Guidelines have been developed to support the Planet Passionate teams across the business.



INTERVIEW

Waste management best practice

Peter Martin

Vice President of Operations
Insulated Panels, North America



Waste management was initially challenging at Deland. How did you manage to make such significant improvements towards the Zero Waste to Landfill target?

The first step was to break a relatively large and complex problem into manageable pieces. All our old waste containers were re-purposed into new colour coded, clearly identifiable containers with good signage separating different waste streams. With several streams we had several problems to solve. Some of them, like cardboard and metal were easy, others like foam and peel coat waste took more time and creativity to reduce consumption and recycle.

The demand for insulated panels is steadily growing. Will it be challenging to continue meeting your waste reduction targets in the coming years?

Once we have an outlet for each stream of material, volume becomes less of a challenge. The hard part for our partners is the inconsistency of supply, given that our waste is becoming their raw material. They want a steady, predictable supply, whereas we're endeavouring every day to reduce the amount of waste we generate, and see fluctuations based on our volumes and mix.

What are the barriers to achieving Zero Waste to Landfill?

The biggest barrier is people not caring, so our first objective was to win over the hearts and minds of the guys on the shop floor. If they didn't understand the objective materials would have been put in the wrong streams. We would have ended up with a bunch of commingled material that would be rejected by recyclers and wind up in landfill. As such, we made a very concerted effort to communicate and educate, making it a team effort.

Another challenge has been geography, given how spread out we are. With the foam waste for example, we have a great solution on the east coast, based on a partnership with a group that only operates in the Southeast. To ship material thousands of miles from California or Vancouver defeats the purpose, so scaling across the footprint is critical.

Is there any plan to extend the waste reduction programme to other sites?

Absolutely, in order achieve our Planet Passionate objectives we must execute similar programmes in all plants. Work is already well underway in this regard, with waste streams separated and most going to appropriate destinations. Each plant has its own quirks in terms of materials and local partners, so there's still a few challenges to resolve, but we'll get it worked out.





EXTENDED LIFE MODELS

Extended Life Models enable circularity, foster collaboration and represent a new business opportunity. We have been working on multiple 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.

Take Back Schemes

During 2021 we continued to develop our take back scheme services. We have expanded our current offering beyond the UK and now provide a LIFEcycle service for site waste collection for insulation board waste in the Netherlands, with plans in place to launch a similar scheme in Germany in 2022. For the projects' roll out, we partnered with local waste recyclers to offer a traceable and reliable service to our customers. The waste collected is either recycled or utilised for energy recovery, diverting it from landfill.

QuadCore™ warranty

To reflect Kingspan commitment to hold responsibility for the end-of-life stage of its products, Kingspan Insulated Panels have upgraded their QuadCore™ warranty to incorporate premium lifetime service and maintenance support, including an end-of-life take back scheme, which will ensure that the materials recovered are recirculated within the industry.

Protected by



Kingspan Data & Flooring reuse scheme

In 2021, Kingspan Access Floors launched its first reuse scheme. Thanks to the engagement with other stakeholders in the industry, access floorboards can now be recovered from suitable projects and brought to our facility at Hull, UK to be reconditioned and brought back to the market. The service is currently available in the UK only, with the potential to expand it to other regions in the future.





CYCLING

Where feasible, we strongly advocate for reuse as far as possible 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 commissioned research studies with expert consultants and academic institutions. We are also investing in new technologies and have finalised plans for two pilot chemical recycling plants to enable recycling of our insulation production waste and site waste, with plans to further develop solutions to enable recycling of end-of-life insulation waste in the future.



Chemical Recycling

As part of our global commitment to circularity, Kingspan Unidek became a partner in the PolystyreneLoop (PSLoop) Cooperative for both recycling EPS insulation demolition waste and converting the recyclates, via our suppliers, for use in our products, closing the loop. Through an innovative process, expanded polystyrene (EPS) materials are dissolved and purified before being transformed into the granulated recyclate with no loss of material quality. The HBCD flame retardant used in older EPS boards is safely removed and destroyed within this process whilst the valuable bromine component is recovered. After the processing by PSLoop the recyclate will go back into the supply chain and will be used in the manufacture of our own EPS boards, creating a truly closed loop process. The plant is currently developed at pilot stage.



Mechanical Recycling

In parallel to the pilot projects on chemical recycling, our divisional teams are also exploring mechanical recycling solutions. In 2021, we continued the work with the pelletiser installed in our Kingscourt facility, to process rigid foam into suitable feedstock for applications in our panels. While we continue extending our mechanical recycling capacity within our group, we're also working with external stakeholders on several additional initiatives. We established partnerships through which our partners are mechanically recycling and/or using our foam as feedstock to manufacture industry products, such as ceiling tiles, cement fill and high-density insulation boards.

Recycling technologies study

Investing in innovative technologies is key to support our sustainability strategy and circularity agenda. In 2021, we commissioned a research study on recycling technologies, to identify suitable mechanical and chemical recycling solutions. The study focused on phenolic insulation foam, PIR/QuadCore™ insulation foam and polycarbonate materials and analysed several solution providers based on the type of technology, readiness level, location and business model. We will use the results of the study to adjust our priorities and update our circularity strategy.



RENEWABLE ENERGY PROJECTS BY TYPE AND GEOGRAPHY

Europe



BIOFUELS

7,757 MWh
1 project



BIOMASS

7,680 MWh
7 projects



HEAT PUMPS

1,021 MWh
2 projects



SOLAR

23,997 MWh
33 projects



WIND

1,083 MWh
2 projects

Americas



SOLAR

4,575 MWh
3 projects

Australia



SOLAR

1,550 MWh
3 projects



OUR CARBON PATHWAY

2021 Carbon Footprint

Targets

Pathway

Aligned
with 1.50
trajectory

2030

50%
Reduction in
raw material

-50%

Reduction in the primary
raw material intensity

We understand that a robust carbon strategy encompasses emissions across our value chain.

Having established our GHG hotspots and the areas we should focus on to achieve our vision, we have set ambitious targets that cover both our raw materials' carbon intensity and our direct operations.

To reach our targets and contribute to society's transition to zero, we will deploy a wide range of abatement tactics and measures, making sure that our emissions are abated to a rate consistent with a 1.5°C aligned emissions trajectory.

With more than 80% of our value chain emissions attributable to our upstream activities, we will redouble our efforts on our supplier engagement programme and, where appropriate, invest in joint initiatives.

Within our operations we will focus on making progress on our renewable energy pathway, which includes, among others, electrification of our processes and energy efficiency measures.

For unabated direct omissions, we will look into neutralisation methods (e.g. carbon capture) towards the end of the programme as our first priority is absolute emissions reduction as far as technically possible.

2021 Carbon Footprint

Targets

Pathway

Aligned
with a 1.5°C
trajectory

2030

VALUE CHAIN

15%
End of Life

SCIENCE
BASED
TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Tracking analysis

Engagement and

42%

Absolute reduction
in scope 3 emissions



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 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

Graduate Attraction and Development

Graduates participated in our Yours to Shape Development programme, which was in its fifth consecutive year in 2021. The objective of the programme is to provide new graduates with a network to collaborate across the Group and develop the capabilities to drive their career in Kingspan. It spans 12-months of interactive workshops, peer coaching, masterclasses with senior executives and assignments on the Promote e-learning platform. This culminated in the annual Graduate Projects Showcase in September 2021, where the participants representing 13 different countries presented five business improvement projects to a wide-ranging internal audience across Kingspan. The Yours to Shape programme in 2021 was redesigned to be delivered 100% virtual given on-going travel restrictions but some residential modules will resume in 2022. The next cohort, which commenced in November 2021, is our largest group of international graduates to-date, with 45 participants of which one third are female. Kingspan continues to be an attractive employer of choice for young, talented graduates with a 44% increase in applications to our global website in 2021 for graduate positions. While we have recruited traditionally from engineering disciplines, our product impact and Planet Passionate programme has appealed increasingly to those with backgrounds in material science, data analytics and sustainability to drive our Innovation, Digitalisation and Planet Passionate agenda.

Next Generation of Leaders

PEAK (Programme for Executive Acceleration in Kingspan) was launched in 2018 and is targeted at developing high potential middle managers for future senior leadership roles. Of those who attended the first programme, 74% have been promoted to the next level. 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. Over 100 executives have participated in PEAK, which has strengthened cross divisional relationships, as well as led to further integration of executive talent from recent acquisitions. The fourth cohort was launched at the end of 2021 with the highest level of female executives embarking in PEAK in 2022.

Advanced Management Programmes

An Advanced Management Programme was launched in May 2021 in partnership with INSEAD's executive business school in France. This new programme supports Kingspan's senior leaders to engage with the enterprise level goals in a more collaborative way while transforming their leadership capabilities to drive significant long-term growth. Thirty of our senior executives attended a week-long residential programme on INSEAD's campus in Fontainebleau in November 2021 as well as undertaking a 5-week on-line module on Innovation in the Age of Disruption.

We held our inaugural 'Developing Leaders as Coaches' cross divisional programme in 2021. 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. We will continue to roll out this programmes next year to ensure the on-going 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.

Our People are our business. We unlock the potential of our employees and through them make a difference in the world.

A MESSAGE FROM OUR CEO

Gene M. Murtagh
CEO
Kingspan



I am delighted to introduce our second Planet Passionate report which covers our progress and achievements for the year 2021, a year the pandemic continued to reverberate across the globe, altering how we interact, live and work. As we plan and implement our recovery efforts, we are presented with a historic opportunity to help tackle the climate crisis whilst building a more resilient, resource-efficient and equitable world.

Transforming buildings is an important element of addressing the climate crisis as they represent approximately 39% of global greenhouse gas emissions. We are uniquely placed to help support the decarbonisation of the building sector via our extensive offering of high-performance, energy saving systems and solutions. In 2021, our insulation products sold globally were estimated to save 193 million tonnes of CO₂e over their lifetime.

We are fully committed to reducing the environmental impacts of our key products whilst maintaining their high performance. Throughout 2021, we collaborated with our suppliers to find short- and medium-term solutions to help realise this goal. An example of our commitment was the investment in H2 Green Steel ('H2GS'), a company pioneering new production methods for lower impact steel manufacturing using green hydrogen. Use of lower emissions steel could help us reduce the embodied carbon of our insulated panel products by up to 25%. We are excited with the progress made this year and aim to announce new product offerings in 2022.

In addition to our efforts to help the decarbonisation of the building sector, we worked tirelessly to improve our environmental performance. Despite the organic growth experienced during the year, we reduced our GHG emissions by 4.3% compared to 2020. In June, we voluntarily updated our science-based targets to bring them in line with a 1.5°C future and our Planet Passionate carbon targets. We have also agreed on an internal carbon charge of €70 per tonne of CO₂e that will be implemented throughout our business in 2023.

We continued investing in renewable energy generation projects across our operations and we also commissioned a renewable heat study that helped us better understand our heat use across our business. This will allow us to make targeted investments in line with our group-specific needs and market specificities. We are also making good progress on our circularity agenda; we recycled 843 million PET bottles into our manufacturing processes and reduced our company's waste to landfill by 13% compared to last year.

In November, we launched Planet Passionate Communities, a programme that will support people and communities around the world. We also unveiled the programme's flagship project; a partnership with GOAL, the international humanitarian response agency, to support them in their transformative work across the world. Through this initiative, we are proud to be supporting people and communities while promoting sustainable practices using responsibly sourced materials.

As the second year of our ten-year Planet Passionate journey comes to an end, we need to maintain our momentum; we have a lot more to accomplish, but we are confident that with the commitment and hard work of all our employees across the world we will overcome the challenges we'll face along the way. In the meantime, we hope that this Report will give you some insight into why sustainability is such an important part of our strategy and provide you with a better understanding of the many initiatives and projects we implemented during the year.

Thank you for being part of our journey.

Gene M. Murtagh
CEO

