

# Creating Sustainable Futures

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**Social usefulness. It's a phrase our founder placed at the heart of Arup. Our commitment to social usefulness continues to drive our members and to shape the work they deliver.**

**In this annual report, we present our global performance for the year ending March 2022. We also offer examples of our work that demonstrate how we bring imagination, technology and rigour to the challenge of creating sustainable futures.**

The technology we are using for the immersive experience version of the annual report ([see here](#)) is based on our [Virtual Engage tool](#) ↗

The 'worlds' that you are encouraged to enter and explore have been created by Arup's [Visualisation specialists](#) ↗



Chair's statement

# A challenging and rewarding year

Left to right

Dervilla Mitchell – Deputy Chair

Alan Belfield – Chair

Tristram Carfrae – Deputy Chair

[View immersive experience](#) ↗



What did last year teach us? The power of resilience, and especially the resilience of our people, in the face of unforeseen events. The wisdom of being adaptable. The satisfaction of making progress as we focus on what matters most – working with our clients and partners to plan, design and build a sustainable future.

### Commercial performance

We achieved a return to our pre-pandemic growth during the year ending 31 March 2022. Our global income (revenue and other income) grew by 10 percentage points to £1.9bn and we recorded a 10% operating profit before global profit-share.

This strong financial performance was achieved during a year when, once again, lengthy lockdowns were in place across several geographies within which we operate. Our focus on supporting our clients as their strategies evolved and empowering our people to be adaptable and to protect their wellbeing were instrumental in achieving this growth.

The war in Ukraine began during this reporting period, but financial implications for Arup were modest. Our international network of offices did not include any in Russia and we withdrew from the small number of projects in the country. We introduced additional due diligence to ensure all our client work and procurement complies fully with economic sanctions.

10%    £1.9bn

Operating profit

Global income



**“We donated more than £300,000 to UN-endorsed humanitarian programmes working with those affected by the war in Ukraine”**

#### **Humane organisation**

One of Arup's core values is to be a humane organisation. Our members' response to the war in Ukraine and other humanitarian tragedies was significant last year. Many members took practical action to support refugees in their communities and to fundraise.

Through our Community Engagement Programme and matching funding programme, together with our members we donated more than £300,000 to UN-endorsed humanitarian programmes working with those affected by the war in Ukraine. This response was informed by earlier programmes we had initiated to support Rohingya refugees from Myanmar, those seeking new futures outside Afghanistan, and refugee communities in Greece, Jordan, and Lebanon.

Our experience of the COVID-19 pandemic, combined with other unforeseen changes that so many of us have faced, have acted as powerful reminders of the importance of mental, emotional, and social support. Last year, we introduced global wellbeing commitments designed to promote an environment in which taking action to protect the personal wellbeing of our members is part of the way we all work.

We are empowering our members to operate a new hybrid working model in ways that work for both our clients and our teams. This model gives our members greater flexibility in deciding how and where they work, while also recognising the value of being together in person. Our digital tools have been instrumental in facilitating our members' adaptability and flexibility. I was delighted that our digital technology team, which operates as one global network, was awarded 'IT Team of the Year' at the UK IT Industry Awards and that the team's leader, Rob Greig, was named 'Chief Information Officer of the Year'.

Arup was also named Britain's Most Admired Company 2021 in Management Today's respected annual study into corporate reputation. This is a particularly pleasing award as it is founded on an extensive survey of business leaders who rate the performance of competitors in their sector.



### Committing to climate action

In November 2021, Arup experts and leaders participated in the United Nations climate change conference, COP26. At this global gathering in Glasgow, we made two important decarbonisation commitments that are shaping our contribution to climate action.

Our first commitment focuses on making net zero buildings a reality. Recognising our significant influence over the design of new and existing buildings, we committed to applying whole life carbon assessment techniques to our building design projects. Since COP26, this commitment has driven globally significant work by more than a thousand Arup members, work that is advancing the collection and analysis of datasets that have the potential to facilitate the property sector's next steps toward implementing net zero goals. We must move beyond target setting and into climate action, and as a member of the UN Race to Zero campaign we are pushing hard to make that a reality.

Our second COP26 commitment focused on our work for the energy sector. Arup's global energy business continues to grow, and we are committed to supporting full decarbonisation of the world's energy and power systems. In support of the global energy transition, we committed to not pursuing work that supports the extraction, refinement, or transportation of hydrocarbon-based fuels. All our work in the energy sector is now about advancing the energy transition and we are working closely with existing and new clients across the energy industry to implement the solutions that will minimise future emissions.

Our contribution to the conference also included working with the COP26 Presidency team as sustainability consultant, in partnership with others. Using international standard ISO20121, we developed the most advanced carbon management plan for any UN climate change conference to date and we worked closely with the conference organisers to improve the sustainability of goods and services procured for Glasgow. Independent verification by the British Standards Institute allowed us and the COP26 Presidency to evidence the positive impacts this approach had. It is clear that the sustainability of major events can and should be strengthened, with carbon management as a primary tool.

### Contributing to sustainable development

Reflecting on our projects for clients, I am pleased that our collective expertise is increasingly channelled toward our goal to move the world closer to sustainable development. Examples from last year range from our work to create a decarbonisation strategy for three Great Barrier Reef islands to our artificial intelligence land-use analysis tool, Terrain. We are using Terrain to demonstrate why some of the world's largest cities are more at risk of climate change-driven flooding than others.

Our digital solutions include Charge4All, which enables an equitable approach to the selection of kerbside locations for installation of electric vehicle charging infrastructure, while our sea level rise tool seeks to incorporate uncertainty over future sea level in specific locations within local decision making.

Our Circular Buildings Toolkit, developed with Ellen MacArthur Foundation, is helping designers, construction clients and asset owners to put circular economy principles into practice.





The British Council for Offices named Derwent London's 80 Charlotte Street 'best commercial workplace' in the UK

### Continued innovation

It was fantastic for our teams to be recognised last year for their work on projects such as M+, Hong Kong's new museum of visual culture, which won the non-residential Grand Award at the Hong Kong Institution of Engineers' Structural Excellence Awards. The British Council for Offices named Derwent London's 80 Charlotte Street 'best commercial workplace' in the United Kingdom. We provided a wide range of engineering and technical specialist services for this operationally net zero carbon building, where we are a main tenant.

MX3D Bridge is a striking new addition to Amsterdam's city centre. The world's first 3D printed steel bridge has proven that it is possible to print safe, large-scale structures in metal, reducing waste and achieving shapes that cannot be formed using standard methods of steel manufacturing.

In what has been an incredibly challenging period for the aviation industry, Arup has continued to provide a diverse range of multidisciplinary services in support of major aviation projects. With Delta Air Lines, our recent work includes Terminal C at LaGuardia Airport in New York and the first major phase of Delta Sky Way at LAX, both of which opened in 2022. Critical to the success of both projects was the months of extensive process development, training, and familiarisation with our client and stakeholders by our operational readiness activation and transition team.

**“The world's first 3D printed steel bridge has proven that it is possible to print safe, large-scale structures in metal, reducing waste and achieving shapes that cannot be formed using standard methods of steel manufacturing”**



**Change is a certainty**

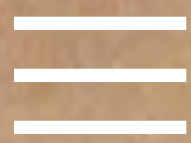
The drivers of global change continue to exert powerful and often unpredictable pressures on our social, political, and economic systems. Whether it is climate change, urbanisation, loss of nature and biodiversity, or social movements to address inequality, the environment within which we operate has been changing – and there is more change ahead.

Arup's members are people who want to shape a better world. We do this by focusing on how our work with clients and partners can allow them to thrive while contributing to rapid climate action, greater social value, and deeper resilience.

Alan Belfield  
Chair







# Our performance

Explore key data about our performance for our financial year ending March 2022.

ARUP

- Our headline figures
- Our financial statement
- Our financial data
- Our people
- Our carbon footprint
- Our community engagement



[View immersive experience](#) 





**Our headline figures**

Our business is strong, our influence is growing, our focus on contributing to sustainable development is deepening. Above all, we continue to place the greatest importance on delivering excellence to our clients.

£1.9bn

Revenue

6,864

Clients

141

Countries

165,111

Carbon emissions (tCO<sub>2</sub>)

17,447

Members



## Our financial statement

We achieved a strong and consistent financial performance during the year ending 31 March 2022. Our revenue grew by 10% to £1.9bn, with our operating profit (before member profit-sharing) of 10% returning to pre-pandemic levels.

All five of our geographic regions performed well, reflecting the diversity and resilience of our expertise and offer.

Our financial performance was delivered in the context of a highly competitive labour market in some areas, wage inflation, and disruption from ongoing COVID-19 lockdowns in multiple locations, which added complexity to our work.

In light of uncertainty experienced since 2020, we continued to prioritise healthy cashflow and maintenance of strong cash reserves. We will continue to monitor the impacts of inflation on our operations, competition for talent, and our clients' plans. Our operating costs were lower than forecast last year, in part due to continued low levels of business travel.

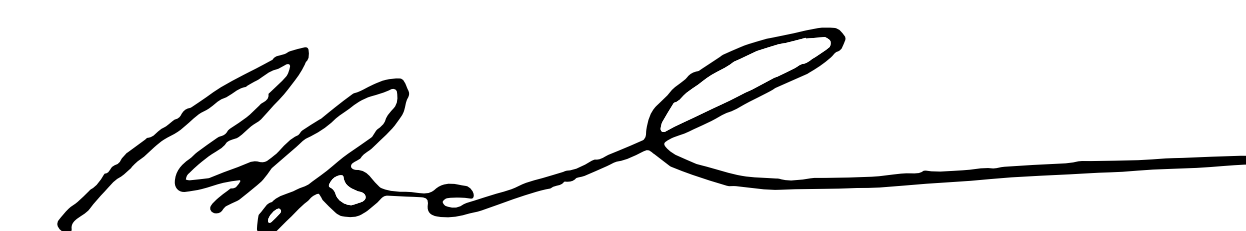
We ended the year with a healthy forward order book of £1.39bn. Growth in both our income and profitability has provided a strong platform from which to implement our strategic ambitions.

# 10%

Operating profit

# £1.39bn

Forward order book



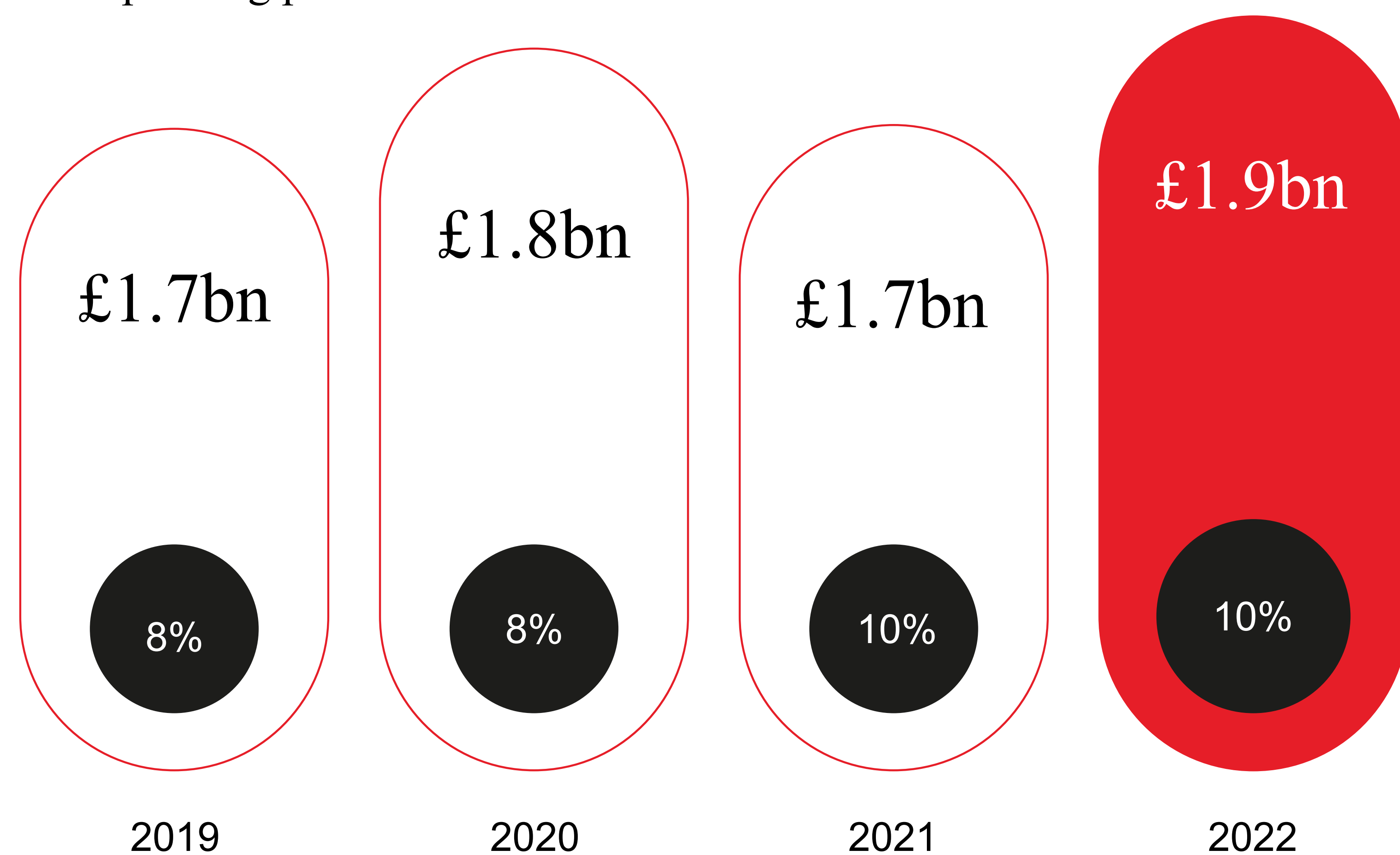
Rob Boardman  
Chief Financial Officer



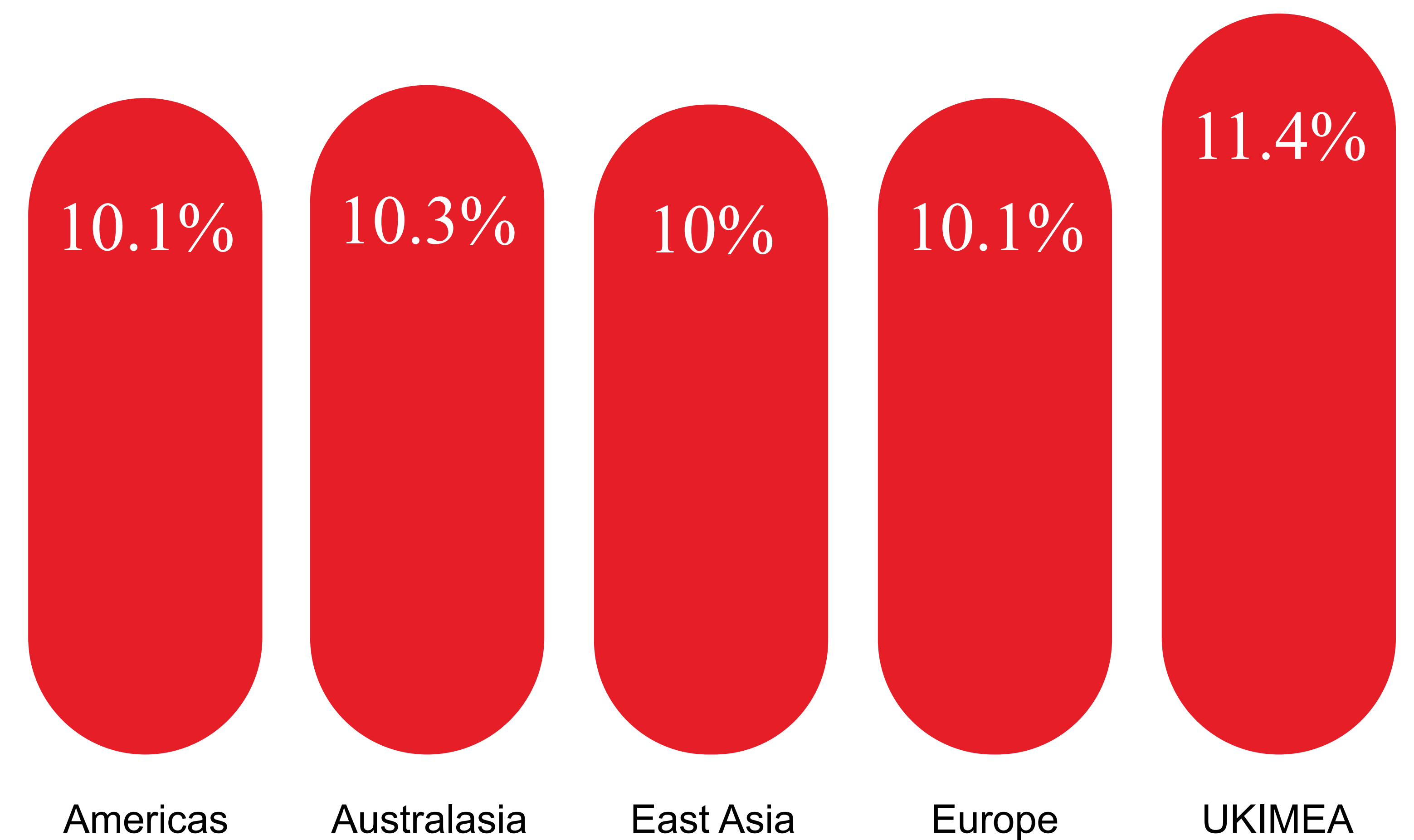
Our business continues to perform well thanks to the commitment and expertise of every member of our firm.

### Revenue (£bn)

- Operating profit shown as a % of total revenue.



### Profit by region (%)

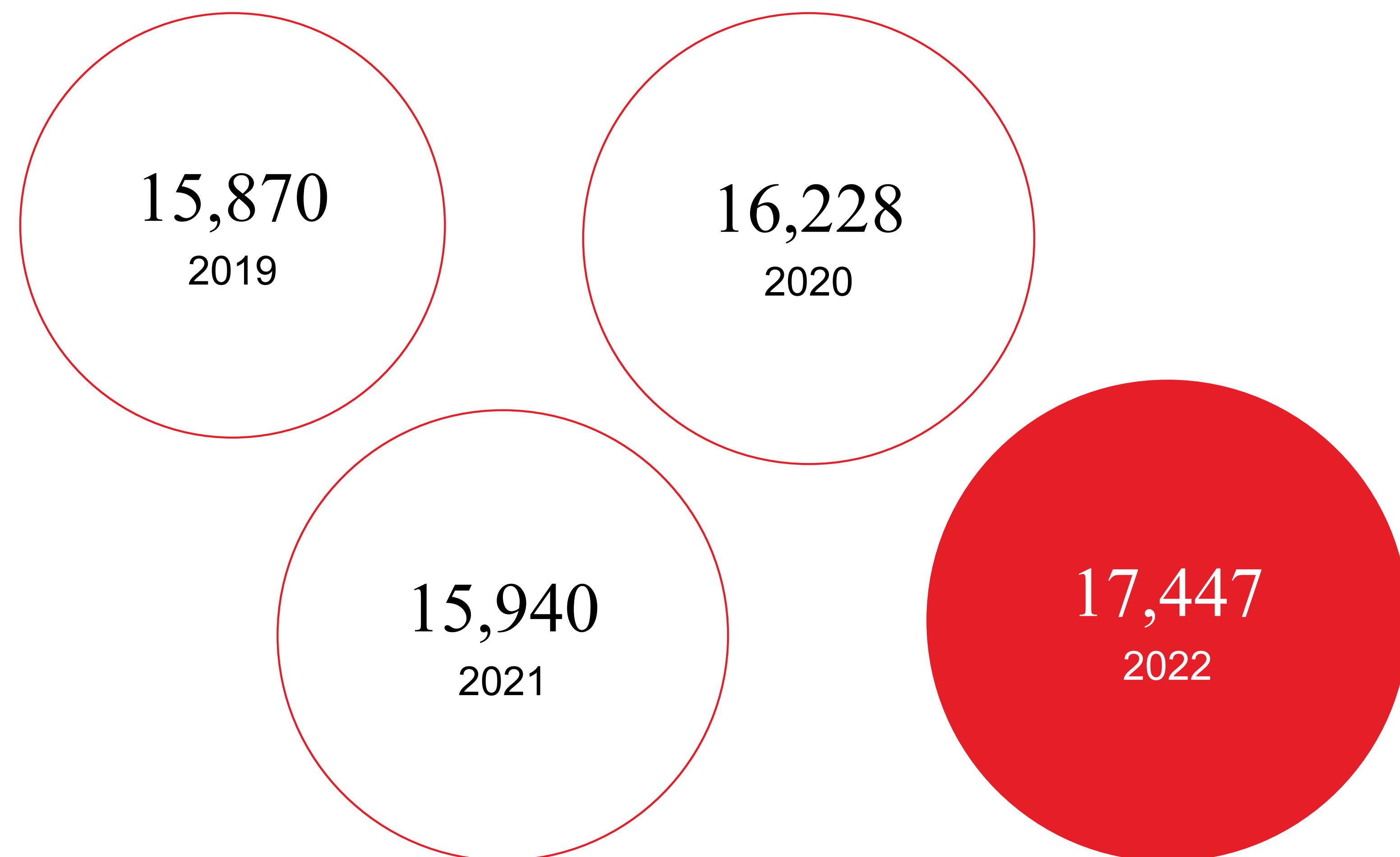




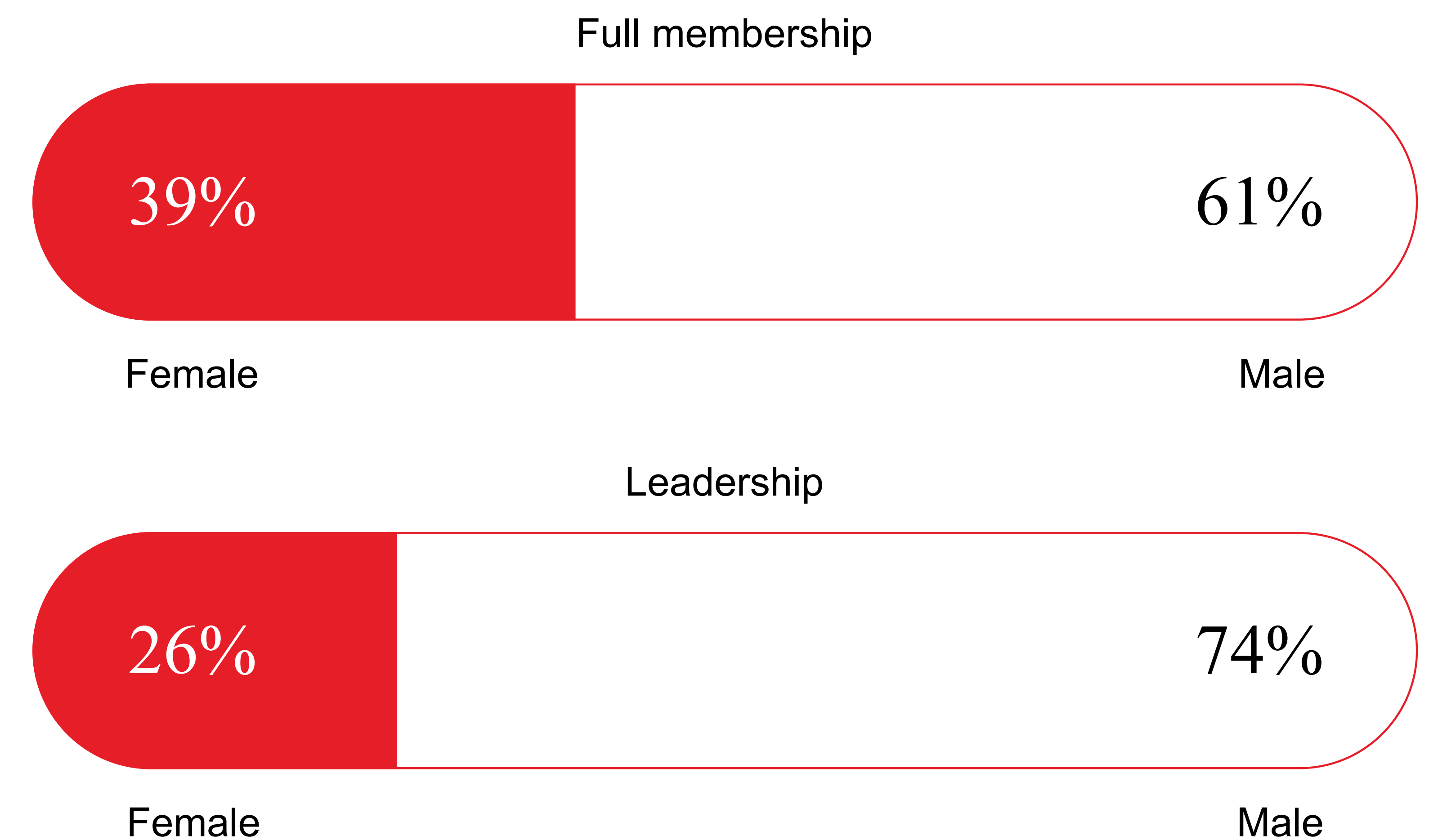
Last year, our global membership grew against a backdrop of a highly competitive labour market.

We are making progress towards our target of a minimum of 40% female membership, both within our total membership and within our leadership.

Number of people



Our gender balance





Our emissions are 14% lower than our 2019 baseline figure. While there is a great deal more to do, we are currently on track to meet our net-zero target by 2030.

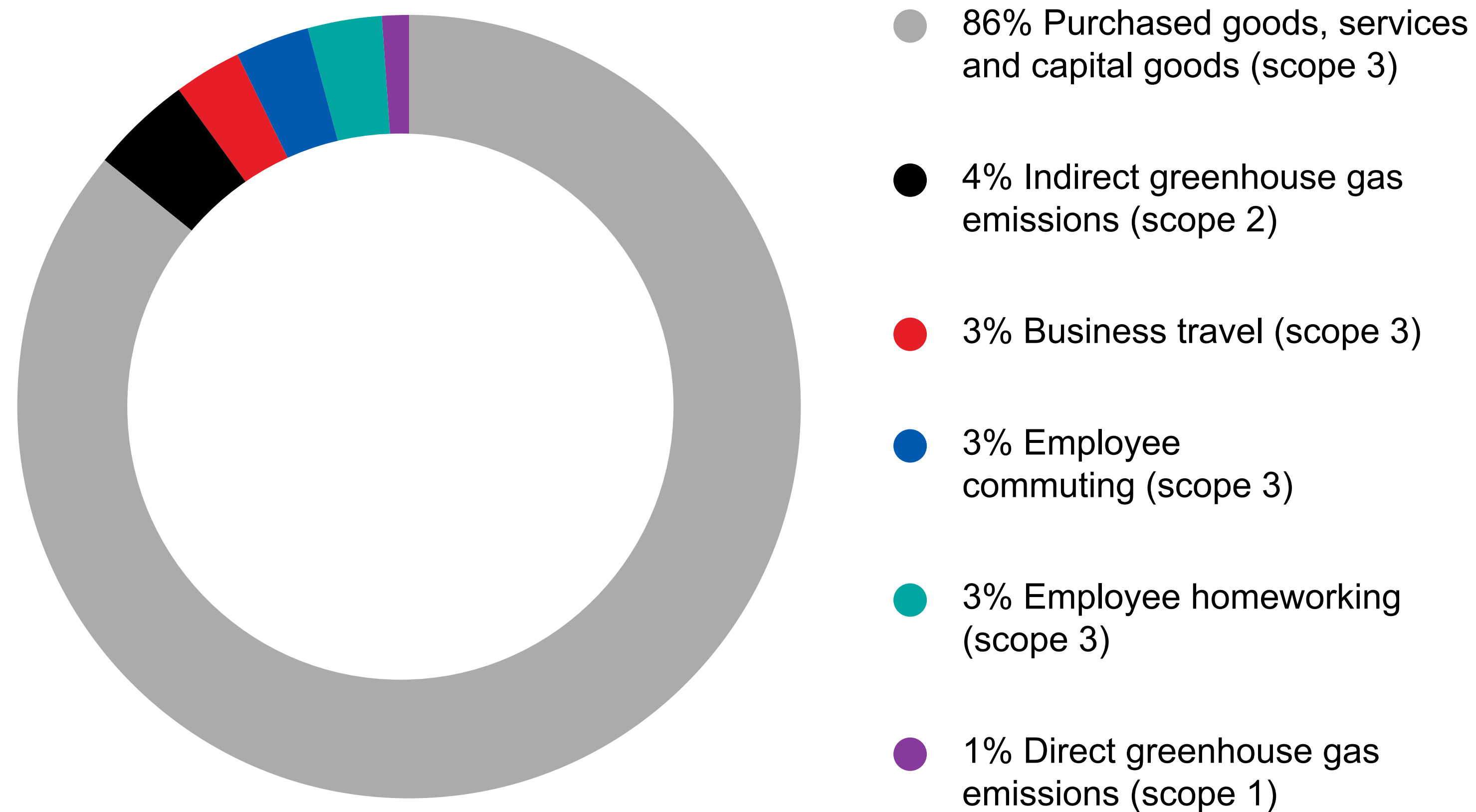
# 165,111

Tonnes of CO<sub>2</sub> emitted

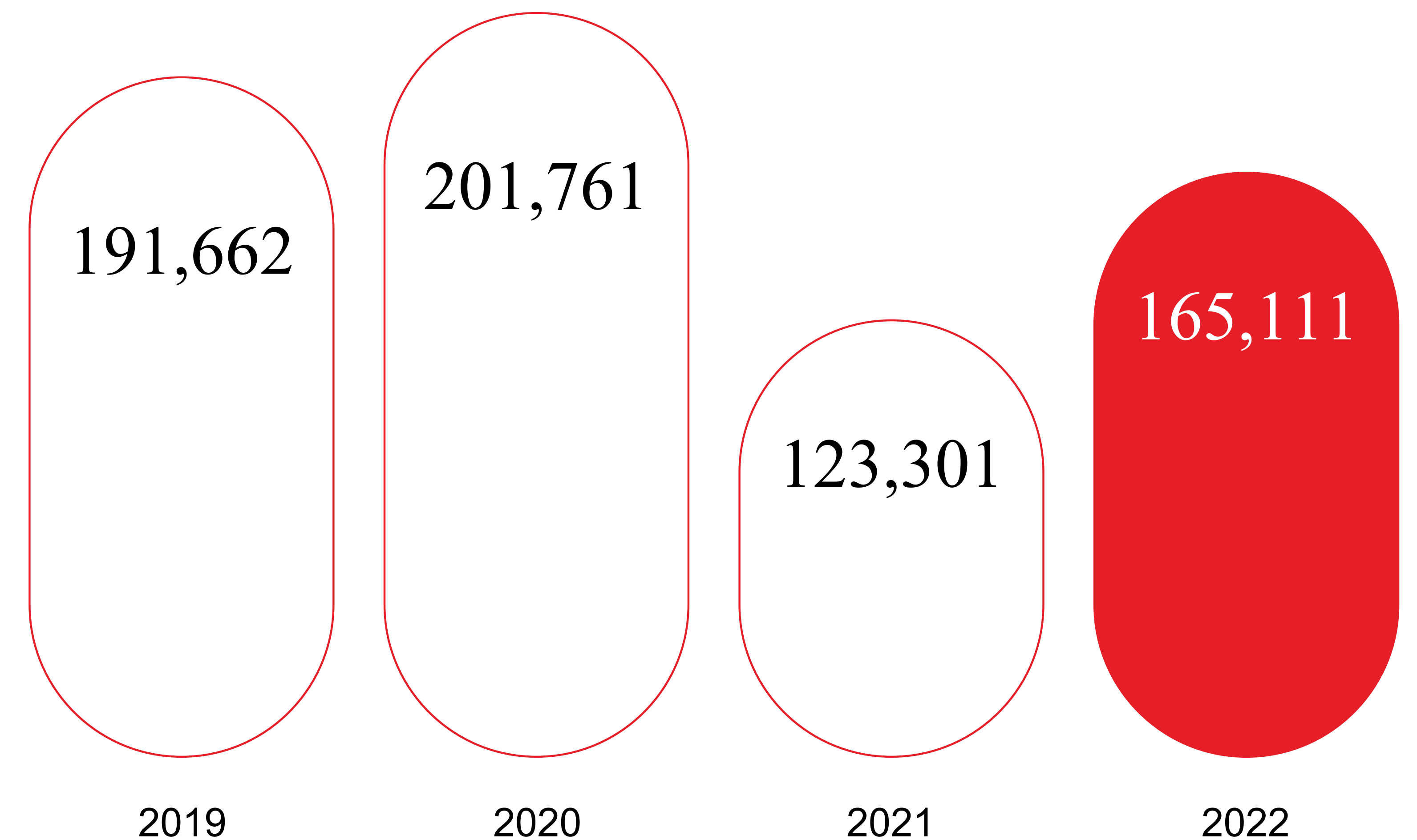
# -14%

Decrease in carbon emissions compared to 2019 baseline year

## Carbon footprint



## Carbon emissions over time (tonnes CO<sub>2</sub>)





Every year, we invest a portion of our income in our global community engagement programme, offering our specialist technical and strategic skills on a pro bono basis. We collaborate with community-based charities and not-for-profit organisations to support the most marginalised and vulnerable communities.

44,000

Hours of community engagement work  
by Arup members

£4.6m

Arup investment

170

Projects delivered

1,515

Number of Arup members contributed

34

Countries we worked in

1m

Individuals reached (approx)





# Our work

→ **Designing circular economy buildings**  
Germany

→ **Bridges to connect communities**  
Rwanda

→ **Building resilience to extreme weather**  
Peru

→ **Engineering the upcycling of a skyscraper**  
Australia

→ **A carbon neutral strategy for a global leader**  
Hong Kong

→ **Extending a vital transit line**  
USA

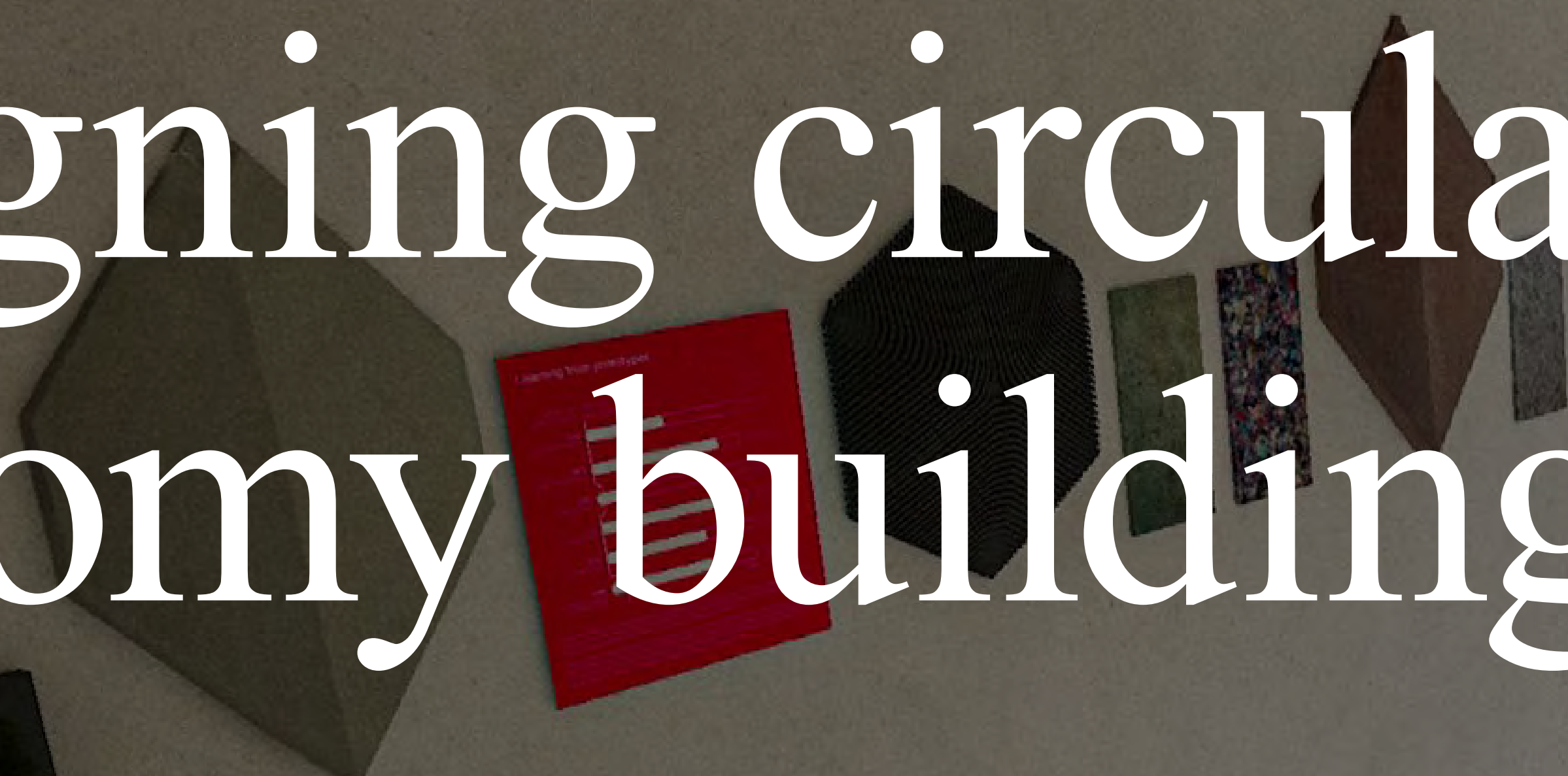
**[View immersive experience](#)** →



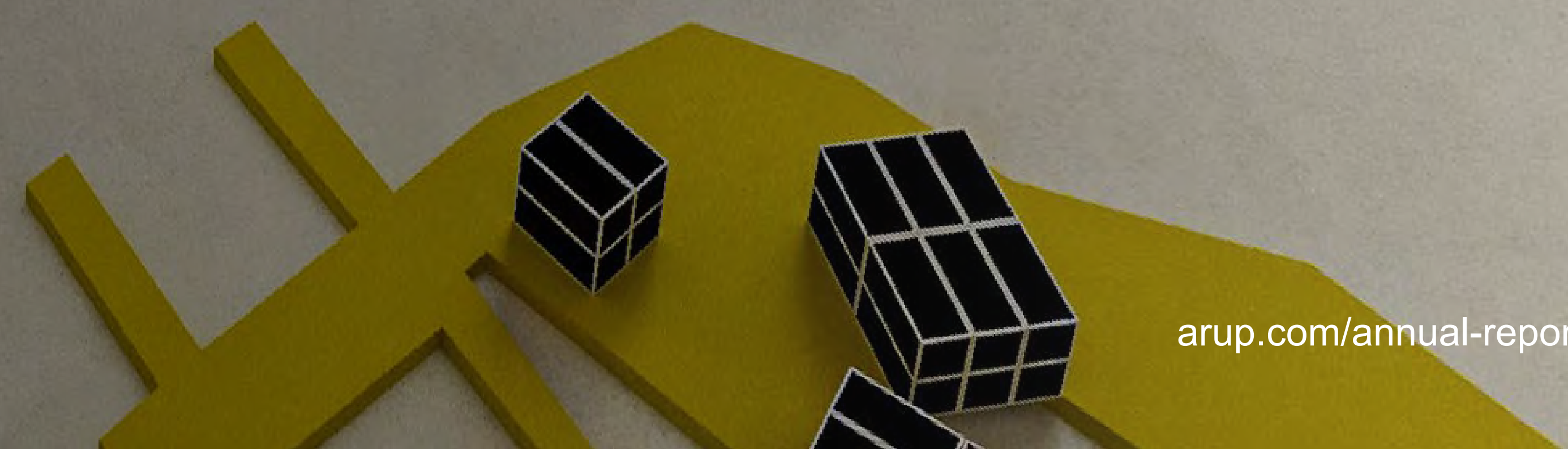


ADPT circular building system  
Germany

# Designing circular economy buildings



[View immersive experience](#)





We are testing a new approach to designing a building system, one that allows repeated regeneration, modification, disassembly, reuse and relocation of buildings. The result is drastic reductions in carbon and waste.

The first prototype showcased at 'Folkwang and the City' exhibition in May 2022



### A partnership for change

The global built environment is responsible for a major proportion of the world's CO<sub>2</sub> emissions and waste. We partnered with Futur2K to test technical solutions with the potential to transform the building sector.

### Real estate built to last longer than a lifetime

The ADPT-system consists of elements and modules which form larger building structures when put together. Thanks to fully reversible connections between parts, ADPT-Buildings are highly adaptable and can be altered if needs or contexts change. In an ever changing world, ADPT-buildings can change too, allowing more freedom, resilience and peace of mind.

What may begin as a medium sized office or residential building, can grow or shrink over time, change floor plans, technology, facades and other elements and relocate if needed. Should owners decide they no longer need the building, separate sections can be taken apart and reused to form a completely different structure. What started as a larger detached office building can be repurposed and begin its next life as residential units adding stories on top of existing buildings or a school filling the space between existing building structures to foster redensification.

### Tomorrow's future unveiled

The first small scale prototype showcasing the potential of the ADPT-system, 'Building Block No 1', was unveiled in May 2022 at an exhibition on the future of sustainable urban and societal development. It was the centrepiece of Museum Folkwang's Exhibition 'Folkwang and the City' in Essen, Germany. Visitors could explore the module and learn how this new construction approach can be a driving force to move us toward a net-zero and low waste society.

### Reused, not remade

Nothing is ever demolished, so the carbon footprint of the construction process is radically reduced. After the first lifecycle-loop, materials are reused rather than remade from scratch, avoiding the depletion of more natural resources. The result is a new, more sustainable way of producing the built environment.

ADPT is a powerful example of how the circular economy could offer us an exit from today's throwaway society and toward one where waste is eliminated and resources are circulated, allowing buildings and our natural habitat to regenerate. Circularity is one of the most important shifts we must make to combat climate change and restore nature. It is also an approach that unlocks new ecological, social and economic potential.





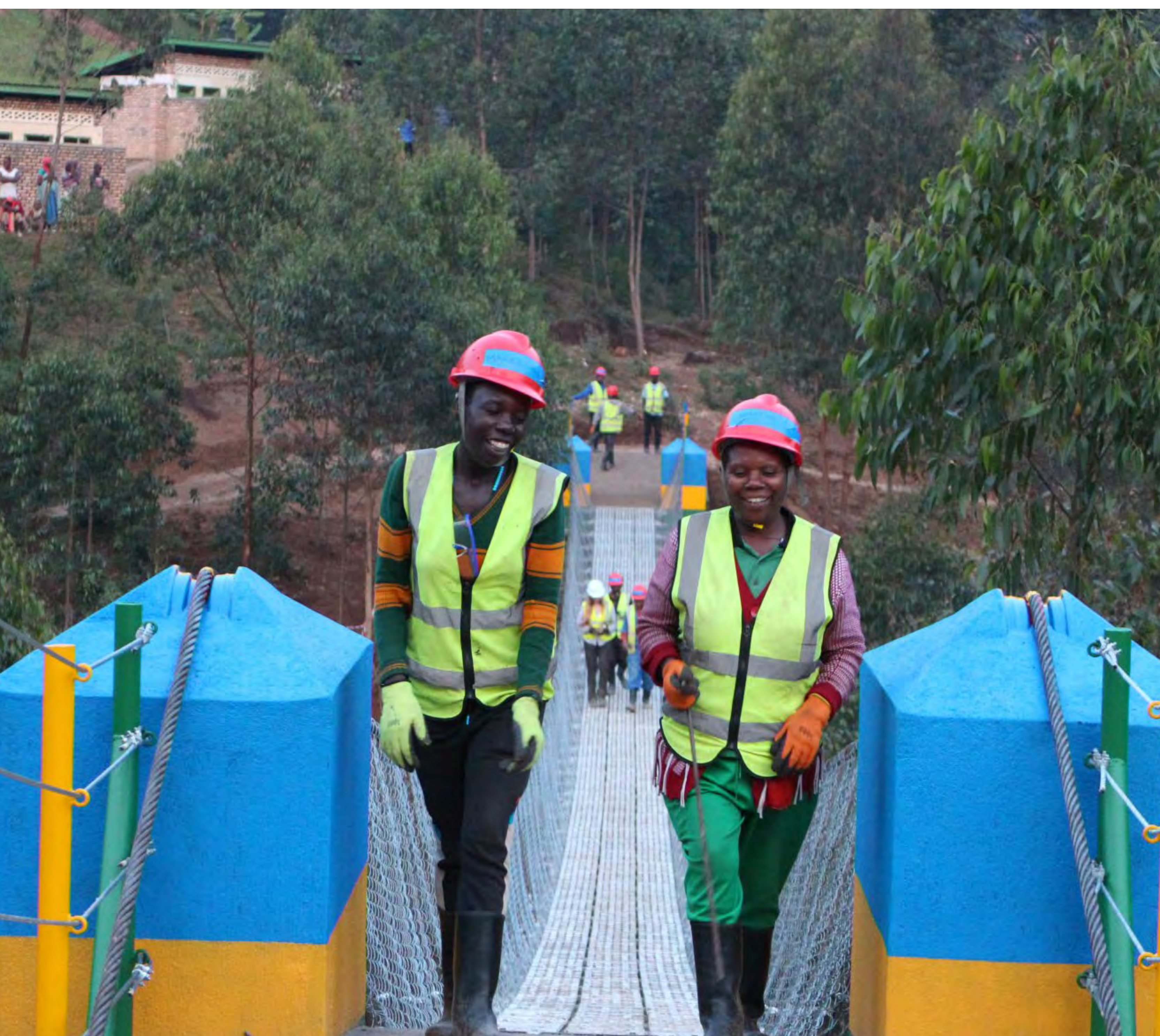
Bridge Visualisation Tool  
Rwanda

# Bridges to connect communities

[View immersive experience](#) 



Empowering communities in developing countries to combat rural isolation with digital technology that helps build bridges across dangerous terrain.



### **The importance of bridges in preventing rural isolation**

Severe seasonal flash flooding and the increasingly severe impacts of climate change means millions of people in East African countries such as Rwanda risk their lives crossing swollen rivers on foot or navigating via dangerous log bridges. Conditions can become so treacherous that connections between local communities are sometimes completely severed. Finding work becomes much harder, while people are cut off from vital services like hospitals, schools, and local markets.

### **Our partnership with Bridges to Prosperity**

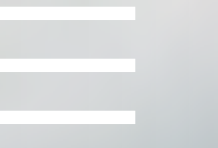
Non-profit organisation Bridges to Prosperity (B2P) builds bridges to connect rural communities with vital services. Arup colleagues have volunteered to support B2P's work for more than ten years, and a recent collaboration led to the development of a much-needed bridge visualisation tool.

### **Helping with digital expertise**

B2P says the tool is aiding negotiations with government partners who co-finance the bridges while playing an integral part in their recent bridge builds. The tool is designed to help communities understand what's going to be built and help train the local workforce on the construction process.

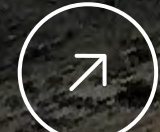
Crossing the newly complete Cyabami bridge in September 2022





Reconstruction programme  
Peru

# Building resilience to extreme weather

[View immersive experience](#) 



Rebuilding Peru after the devastation caused by El Niño in 2017 means reconstructing for long-term resilience. We know this climate cycle will return, intensifying over time due to climate change.

#### **The destruction from El Niño**

A third of Peru's population lives in immediate danger of flooding and landslides triggered by the extreme climate pattern, El Niño. In 2017, it was responsible for a devastatingly large amount of rainfall, destroying hospitals, schools, roads, transport links and critical infrastructure. The livelihoods of over a million people were impacted, approximately 178,000 people were displaced, and more than one hundred were killed.

#### **How Peru's future will be safeguarded**

This is the largest infrastructure project ever undertaken in Peru, incorporating 500km of waterways. It aims to protect communities, public facilities, crops, and businesses for the next 120 years. The complete package of flood prevention measures includes riverbank defences, drainage systems, hazard assessment and a national early warning system.

#### **Sharing knowledge for generations**

The UK Delivery Team created for the Peru Reconstruction Programme includes Mace, Arup and Gleeds. Together, we set up a knowledge transfer programme with our client to provide structured learning to more than 1,500 people. The aim is to equip public officials, contractors, and industry professionals regionally and nationally with the skills they need to deliver future critical infrastructure projects themselves.



A student enjoying her renovated school



Quay Quarter Tower  
Australia

# Engineering the upcycling of a skyscraper

[View immersive experience](#) 



Saving the equivalent carbon of 70,000 flights from Sydney to Melbourne by renovating rather than rebuilding one of Australia's tallest skyscrapers.

#### **Sustainable design with no limits**

The AMP tower was once the tallest building in Australia. Decades after it first graced the Sydney skyline, the 1970s skyscraper needed major refurbishment. We worked in collaboration with architects 3XN to regenerate the tower and neighbouring properties, creating a mixed-use precinct.

#### **Upcycling over demolition**

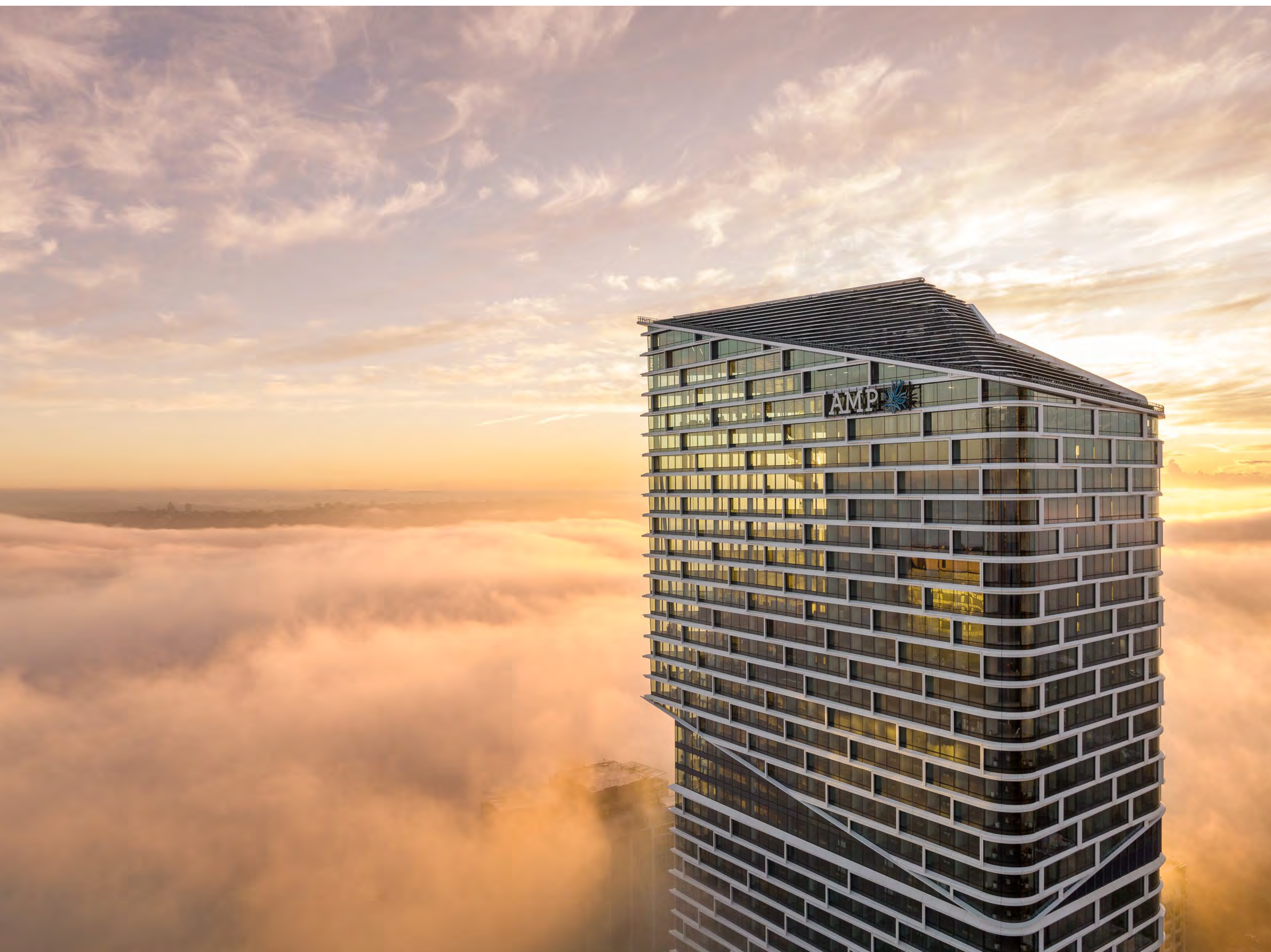
We were determined to push the boundaries of sustainable building design. Where others may have opted for demolition, we wanted to avoid all the waste and new embodied carbon involved in starting again from scratch. Instead, we aimed to reuse as much of the structure as we could.

We knew a more environmentally conscious approach was not only technically possible but could bring far greater benefits than traditional construction. This was a real opportunity to revive the area and make it part of the city's future, not its past.

#### **The greenest of credentials**

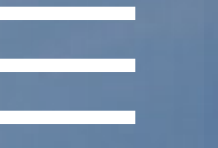
The renewed Quay Quarter Tower achieved a 6 Star Green Star Office Design v3 rating (recognising it as world best practice). It is on track to earn a five-and-a-half star NABERS rating, which will make it one of the top achievers in the country. It has a LEED Platinum rating for wellness and many other sustainability awards.

The impact of the tower's renewal extends throughout the Quay Quarter and is credited with kickstarting a wave of neighbourhood renewal. This includes the return of light rail – the same transport model that triggered a transformation of the area in the early 1900s.




The new tower above the Sydney skyline





MTR Carbon Consultancy  
Hong Kong

# A carbon neutral strategy for a global leader

[View immersive experience](#) 



Using advanced modelling and insight into the future adoption of new technology, we are advising MTR Corporation on how to decarbonise its rail networks and property portfolio, in Hong Kong and around the world.



### Finding agreement at the highest level

MTR Corporation is a public transport operator and property developer headquartered in Hong Kong. We partnered with MTR on their journey to carbon neutrality by developing their long-term carbon reduction road map, which sets out key actions and milestones through to 2050.

The Hong Kong Special Administrative Region Government owns a 75% share in the company. Our role has been to guide senior management at the highest level in the corporation, to agree on priority actions from amongst hundreds of potential carbon reduction measures.

We launched an extensive programme of work, conducting research and stakeholder engagement. Our team analysed the current and future work of every individual business unit through workshops, group discussion, brainstorming, one-on-ones and more. Next, we widened the focus to every department as a whole, as well as every railway and property business.

MTR serves almost four million commuters daily in Hong Kong and is a major operator of sustainable rail transport services in Sweden, Australia, China and the UK so our work stretched far beyond Hong Kong.

One of 98 stations included in the consultation

### Mapping the road to carbon neutrality

The Science Based Targets initiative (SBTi) mobilises the private sector to take urgent climate action by transitioning to net zero. It requires milestones to be set for the coming decades, aligned with the scale of carbon reduction required to keep global temperature increases well below 2°C (compared to pre-industrial temperatures).

MTR brought us on board to carry out a carbon consultancy programme that creates a road map for meeting these targets, ultimately striving to reach carbon neutrality by 2050.



Boston GLX  
USA

# Extending a vital transit line

[View immersive experience](#)



Reviving stalled plans to connect two neighbourhoods with downtown Boston has allowed more than 140,000 residents to access a wider range of employment opportunities.

#### Vital connections decades in the making

For decades, it's not been possible for residents of the densely populated areas of Somerville and Medford to take the train straight to the heart of their state capital.

That's now changed thanks to the Green Line Extension (GLX), which finally connects two historically underserved neighbourhoods with downtown Boston. Before the GLX, only 20% of Somerville's population was within walking distance of rail transit, but that number has now jumped to 90%.

The extension will have a lasting impact on local air quality too, by decreasing car journeys – the number of miles driven in the region is expected to drop by more than 25,000 a day.

#### Extra miles for the community path

The GLX is about more than improving rail services. The 3.5km (2.2 mile) multi-use community path constructed along part of the GLX's Medford Branch of the Somerville line provides a community connection just as important as the rail link. This new path created for walkers, joggers and cyclists provides a link between the existing Minuteman Bikeway/Linear Park and Charles River paths. Combined, the whole route now runs close to 50 miles, connects 11 metro cities, and making it one of the longest community paths in America.

#### The Green Line Extension almost didn't happen

Three years into the design process, the Massachusetts Bay Transportation Authority (MBTA) stopped the project. Costs had ballooned to \$3bn – an increase of \$1bn over previous estimates. We were brought in as part of a multidisciplinary Interim Project Management Team to resurrect the project. Taking only six weeks to draw up a list of recommendations, we helped find \$700m in savings and reduced the construction schedule by 19 months.



A train departing from Union Square station  
Image © @timdoherty1967



**AIRSIDE, Hong Kong** [↗](#)

Showcasing smart, green, and efficient design

Setting a new environmental benchmark through passive design, energy-efficient infrastructure, and renewable energy systems.

**Burrell Collection, UK** [↗](#)

A museum refurbishment driven by circular economy principles

Over 16 tonnes of usable glass were recovered for reprocessing into new architectural glass, while improved solar control of new glazing expected to save 70 tonnes of carbon annually.

**COP26 sustainability advisor, UK** [↗](#)

Setting a new global standard for sustainable events

At COP26, Arup acted as sustainability advisor to the UK Presidency, embedding sustainability and carbon reduction at every stage of the event, from early-stage planning through to the site's disassembly.

**Shatin-to-Central Link, Hong Kong** [↗](#)

A growing railway network with new connections

Improving the connectivity, coverage and convenience of the entire rail network serving the New Territories, Kowloon and Hong Kong Island.

**Australis Energy Offshore Windfarms, Australia** [↗](#)

Harnessing the power of offshore wind

Unlocking the potential of wind energy off the southern coast of Australia, a source of green energy forecast to generate more electricity at a steadier rate than most other renewable options.

**Çankaya Healthy Streets, Turkey** [↗](#)

Creating a more vibrant and accessible community

Designing a safer and more inclusive city by encouraging residents to participate more fully in every-day city life, including walking and cycling and making greater use of shared public spaces.

**SEEK Global Headquarters, Australia** [↗](#)

Designing the next-generation workplace

Innovation in workplace design in Australia, SEEK offers an excellent indoor environment, fully flexible floorplate, access to winter garden space and a soaring seven-storey atrium.

**Post flood assessments, Germany** [↗](#)

Helping a community recover from flooding

We deployed our technical expertise pro bono to help our neighbours – a local school and a care home – recover quickly from damaging flooding.

**Almere Circle Bridge, Netherlands** [↗](#)

A playful pedestrian and cycling bridge

Connecting the city with its surrounding forest, Almere's 240m long active travel bridge provides an eye-catching, safe passage for pedestrians and cyclists above a busy road and canal.

**Climate Ready Schools, Canada** [↗](#)

Transforming school grounds into climate resilient learning and play spaces

Promoting sustainable improvements to school grounds to increase their resilience to climate change and to connect students and the wider community with the natural environment.

**Silicon Valley Clean Water Gravity Pipeline, USA** [↗](#)

Wastewater infrastructure for the next century

This new 5.3km long, 4.2m diameter tunnel is essential to improving water infrastructure and protecting San Francisco Bay and is designed to be resilient to seismic and climate change risks.

**80 Charlotte Street, UK** [↗](#)

Creating London's largest all-electric building

Home to our offices in London, this building developed by Derwent London advances progress toward net zero, with smart enabled features and an inclusive design.



View the immersive experience at  
[arup.com/annual-report-2022](https://arup.com/annual-report-2022) 